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ENVIRONMENTAL ASSESSMENT

INTERIM MINING PLAN
FOR THE
HAYSTACK MINE EXTENSION
TODILTO EXPLORATION AND DEVELOPMENT CORP.

Navajo Allotted Uranium Lease
NOO-C-14-20-8396

Section 18, Township 13 North, Range 10 West, N.M.P.M.
McKinley County, New Mexico

Deputy Conservation Manager - Mining
South Central Region
U. S. Geological Survey
Conservation Division
P. O. Box 26124
Albuquerque, New Mexico 87125

August 21, 1980

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Mining Engineers

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I. DESCRIPTION OF THE PROPOSED ACTION:

A. Introduction:

The proposed action is a request for approval of an interim or partial mining plan to conduct underground uranium exploration and mining within Navajo Indian allotted land in northwestern New Mexico. The proposed underground exploration and mining would be conducted from existing underground workings immediately adjacent to the land involved. Todilto Exploration and Development Corporation submitted the proposed action to the Geological Survey on April 1, 1980, under the provisions of the Code of Federal Regulations, Title 25 - Parts 177.6 and 177.7, and Title 30 - Part 231.10(f).

B. Summary of the Proposed Action:

Todilto Exploration and Development Corporation (TEDCO) currently operates the Haystack Mine at the base of Haystack Mountain in the Ambrosia Lake area of McKinley County, New Mexico (Figure 1). This mine previously consisted of both open-pit and underground uranium mining in Section 13, T. 13 N., R. 11 W., and Section 19, T. 13 N., R. 10 W., N.M.P.M., but present activity is now confined to underground mining in Section 13. These mining operations have been and are conducted under leasing arrangements between TEDCO, the Department of Energy (DOE), and the Santa Fe

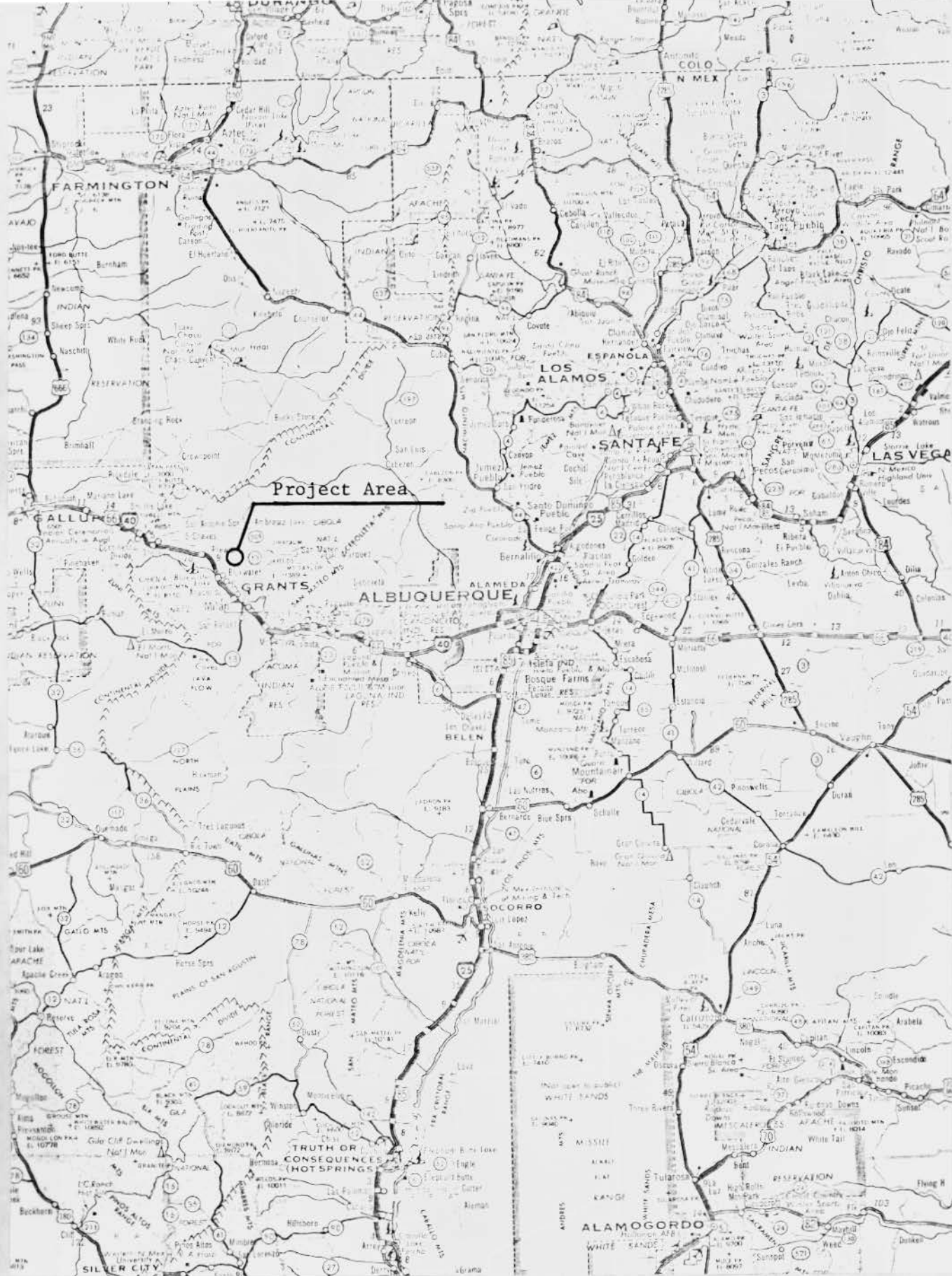


FIGURE 1
PROJECT LOCATION MAP

Railroad Company (SFP). TEDCO now proposes to extend the Haystack underground workings east into the SW/4, Section 18, T. 13 N., R. 10 W. (Navajo Allotted Uranium Lease N00-C-14-20-8396). This quarter-section tract contains Navajo allotted surface and mineral rights, and the Department of the Interior must, therefore, approve any exploration or mining to be conducted.

In the Haystack Mine, TEDCO has driven a main haulage drift to the western boundary of lease -8396, and ore grade uranium mineralization occurs in the drift face at that boundary. TEDCO now proposes to extend this haulage drift 300 to 500 feet east into the lease for explorational development of the projected ore trend. Ore development and possible extraction would be conducted on the ore level using modified room-and-pillar mining with trackless load-haul-dump (LHD) units and haulage trucks. All required equipment and personnel would be provided by the existing Haystack Mine.

Because the mining operation would be essentially exploration, no production schedule can be estimated at this time; however, TEDCO hopes to produce at least 1,000 tons of ore for mill assay and amenability tests at the United Nuclear - Homestake Partners' milling facility at Ambrosia Lake. Future underground operations based on the results of this initial underground exploration and a concurrent surface drilling program, would be conducted in accordance with modifications of the interim or partial mining plan.

There would be no surface disturbance within lease -8396

because all surface facilities required for the proposed underground mining extension would be provided by the existing Haystack Mine in adjacent Section 13. Waste material would be gobbed into abandoned workings of the Haystack Mine, or placed on the waste dump near the Haystack Mine portal. Ore would be stockpiled near the same portal prior to shipment. The mining operations would be conducted above the water table precluding the need for water treatment and/or disposal facilities. Ventilation air for the underground workings would be provided by the Haystack Mine adit entry and a ventilation borehole, both of which already exist in adjacent Section 13. Any impacts resulting from future mining operations would be assessed upon corresponding modification of the interim mining plan.

C. Lease History:

The SW/4, Section 18, T. 13 N., R. 10 W., is a Navajo Indian allotment of approximately 163 acres (Figure 2). The surface and mineral rights for the allotment belong solely to an individual Navajo Indian and his heirs. The surface rights are administered by the Bureau of Indian Affairs (BIA), and the mineral rights are administered jointly by the BIA and the Geological Survey (GS). Water rights for the allotment belong to the State of New Mexico, and are controlled by the State Engineer.

The SW/4, Section 18 has been leased for uranium mining purposes twice before. Between 1951 and 1959, various lessees (primarily the

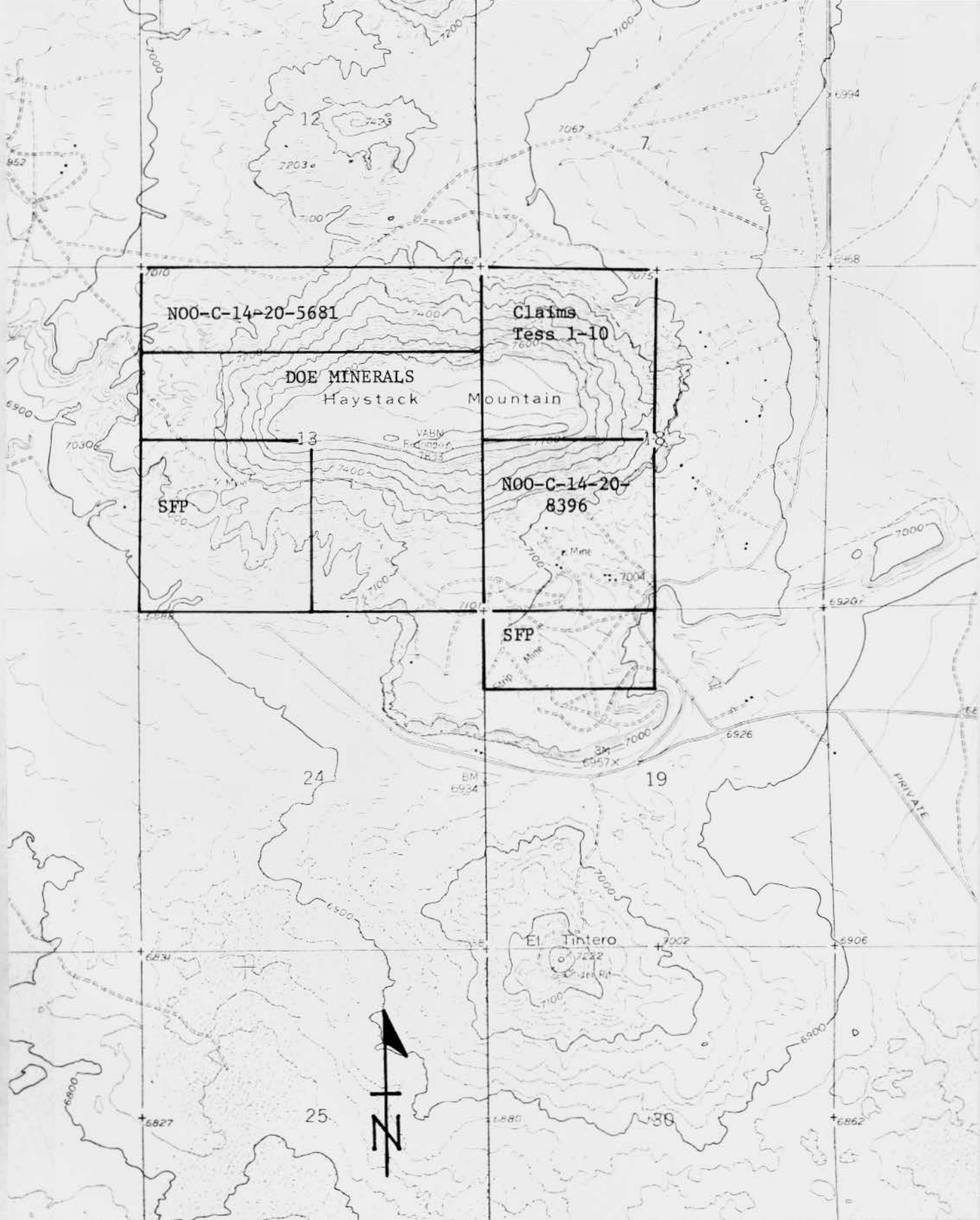


FIGURE 2
LEASE LOCATION AND TOPOGRAPHY

Federal Uranium Corporation) worked the property under Uranium Lease I-149-Ind-8913. Extensive underground mining (the Federal Mine) during this period yielded approximately 22,000 dry tons of ore averaging 0.193 percent uranium oxide (% U_3O_8). About 13,000 tons of this same ore averaged 0.296 percent vanadium oxide (% V_2O_5). The Mesa and Cibola Mining Companies continued the underground mining (the Mesa No. 2 Mine) within the tract between 1962 and 1972 under Allotted Land Uranium Mining Lease 14-20-0603-7240. These operations were limited and sporadic, yielding only about 3,000 dry tons of ore averaging 0.159 percent U_3O_8 . The tract was offered for competitive uranium leasing in Navajo Allotted Land Sale 7 of 1975, but the bids received for the property were below the minimum and were consequently rejected.

TEDCO obtained Navajo Allotted Uranium Lease N00-C-14-20-8396 for the SW/4, Section 18 by direct negotiation with the allottee. The lease was issued March 24, 1980, and is effective for a term of ten (10) years and as long thereafter as the minerals specified are produced in paying quantities. The lease grants TEDCO the right to use as much of the surface as necessary to delineate, develop, and mine the specified minerals. The lease also contains provisions for rent and royalties, surface use compensation, environmental protection, diligent development, reclamation, unitization, bonds, water wells, etc. (Appendix A).

TEDCO also holds Navajo Allotted Uranium Lease N00-C-14-20-5681 covering the 160 acres of the N/2, N/2, Section 13, T. 13 N.,

R. 11 W., N.M.P.M. (Figure 2). This lease, acquired by competitive bidding in Navajo Allotted Land Sale 7, was issued October 8, 1975, and its provisions are very similar to those for lease -8396. To date, TEDCO has completed 97 exploration boreholes within this lease, but has failed to discover any commercially valuable uranium mineralization.

TEDCO holds other mineral properties in the immediate vicinity of leases -5681 and -8396 (Figure 2). The Department of Energy (DOE) controls, and leases to TEDCO, the mineral rights for the S/2, N/2, and the SE/4, Section 13, T. 13 N., R. 11 W.; the surface rights for these tracts are reserved for the Navajo Indian Tribe by Public Land Order 2178. The Santa Fe Pacific Railroad Company (SFP) leases the mineral rights for the SW/4, Section 13, T. 13 N., R. 11 W., and the N/2, NW/4, Section 19, T. 13 N., R. 10 W., to TEDCO. TEDCO has conducted both open-pit and underground uranium mining within these DOE and SFP leases, but present operations are restricted to underground mining within the DOE's Section 13 property. TEDCO also controls the mineral rights for the public domain land in the NW/4, Section 18, T. 13 N., R. 10 W., having staked this land as claims Tess 1 through 10.

D. Lease Exploration:

April 1, 1980, TEDCO requested approval of an exploration plan for lease -8396. This plan proposed the surface drilling and probing of at least 160 to 165 exploration boreholes, with the

possibility of an additional 1,000 delineation boreholes on 25-foot centers. These exploration operations will be very similar to those conducted throughout northwestern New Mexico, although, as in lease -5681, they will be of smaller magnitude due to the relatively shallow depths to the host formation in the lease area. The environmental impacts of the plan were evaluated in a separate environmental assessment prepared by the GS, and the exploration plan was approved June 23, 1980.

Existing roads and trails or overland travel are the primary means of access for the exploration operations, but it is estimated that approximately 12 acres of roads, averaging 16 feet in width, will necessarily be constructed. Drill site preparation will be minimal to nil, with total surface disturbance from such preparation estimated at about 11 acres. Roads and drill sites will be prepared using a D-8K bulldozer.

The 5-inch diameter exploration boreholes will be drilled with a small, truck-mounted, rotary drilling rig. Other major drilling equipment will consist of a 2,000-gallon water truck and two small field vehicles (pickup trucks). Due to the shallow depths of the boreholes, only air and/or biodegradable foam will be used as drilling circulation mediums. Retention pits for fluid mediums will not be necessary except possibly near dwellings and along the southeast side of Haystack Mountain, where borehole depths will be greater.

Each completed borehole will be probed by TEDCO using its own 500-foot reel probe. A certain percentage of the boreholes will possibly be checked; logged by a private contractor using standard gamma ray probes, and some of the boreholes might also be cored to compare chemical analyses of the cores with probing data. All of the boreholes will be surveyed and their locations plotted on up-to-date maps of the leasehold. The exploration data will be submitted to the GS as required.

After drilling and probing, all exploration boreholes will be abandoned according to the requirements of the GS and the New Mexico State Engineer. Dry boreholes will be filled with drill cuttings, while those encountering groundwater will be filled with drilling fluid that meets the State Engineer's specifications. A cement or concrete plug will be placed in the top five feet of borehole, and each borehole's identity will be suitably marked in this plug. Based on TEDCO's extensive exploration drilling in the surrounding area, no significant amounts of groundwater are anticipated within lease -8396.

Abandonment will be completed with the reclamation of all drill sites and access roads. This reclamation will generally consist of grading, harrowing, and seeding the disturbed areas. The exploration operations will be periodically inspected by GS personnel to assure that all boreholes, drill sites, and access roads are adequately conditioned for abandonment.

t

E. Surface Facilities:

TEDCO operates the underground Haystack Mine in adjacent Section 13, T. 13 N., R. 11 W. This Mine would provide the underground entry and all necessary surface facilities for the proposed mining in lease -8396.

The underground operations area for the Haystack Mine contains the adit entry (West Portal); portable explosives magazines; fuel tanks; a small equipment repair shop; a supply storage yard; waste dumps, and ore stockpiles (Figures 3 and 4). Approximately 18 acres of the 20-acre area are used for the waste dumps and ore stockpiles. Outside of the underground operations area, another two acres are used to house compressor, mine ventilation, and electrical sub-station facilities. Most of the equipment within this area is housed in a permanent type shed, and the ventilation borehole for the underground workings is located within this area.

The office, dry, and housing facilities for the Haystack Mine are located in Section 19, T. 13 N., R. 10 W. (Figure 3). This 6-acre area contains a portable office-changehouse building; two small storage sheds; two mobile homes, and two additional mobile home hookups which are used intermittently.

As stated previously, surface facilities to support the proposed underground mining operations would not be constructed in lease -8396. Waste rock would be gobbled into abandoned workings of the Haystack Mine, or placed on the dump at the West Portal. Ore



EXPLANATION



AREAS OF INFLUENCE



BUILDINGS & TRAILERS



HAYSTACK PORTAL



TODILTO EXPLORATION &
DEVELOPMENT CORP.
ALBUQUERQUE NEW MEXICO

HAYSTACK MINING OPERATION

AREAS OF INFLUENCE
T13N, R11W, SEC. 13 & 24
T13N, R10W, SEC. 18 & 19

SCALE: 1" = 1000'

DATE: 6/20/80

DRAFTED BY: R.T.

MAP T-1

FIGURE 3
HAYSTACK MINE SURFACE FACILITIES



FIGURE 4
HAYSTACK MINE WEST PORTAL
FACILITIES

would be placed in separate stockpiles near the West Portal. Depending upon the extent of the mining, some expansion of these waste dump and ore stockpile facilities might be necessary. Since the mining would occur above the water table, no water treatment and/or disposal facilities would be required, and mine ventilation air would be supplied by the existing entries in Section 13. The future construction of any surface facilities in lease -8396, to support extended mining operations, would be included in the corresponding modification of the interim mining plan.

F. Mining Operations:

Mine development would commence with the extension of the 1200 North Haulage Drift (1200 NHD) into lease -8396 for a distance of 300 to 500 feet (Figure 5). This drift would be conventionally driven with a cross-section nine feet high by eleven feet wide to provide adequate space for equipment and ventilation. Ore zone exploration and development would proceed north and south from the 1200 NHD using a modified room-and-pillar method of mining.

Pillars would be developed by driving east-west drifts on 100-foot centers parallel to the 1200 NHD, and then north-south crosscuts on 60-foot centers. These development entries would be eight feet wide by eight feet high, resulting in rectangular development blocks approximately 50 by 90 feet. Development blocks containing ore would then be split into rectangular pillars approximately 20 by 50 feet by driving east-west crosscuts on 33-foot

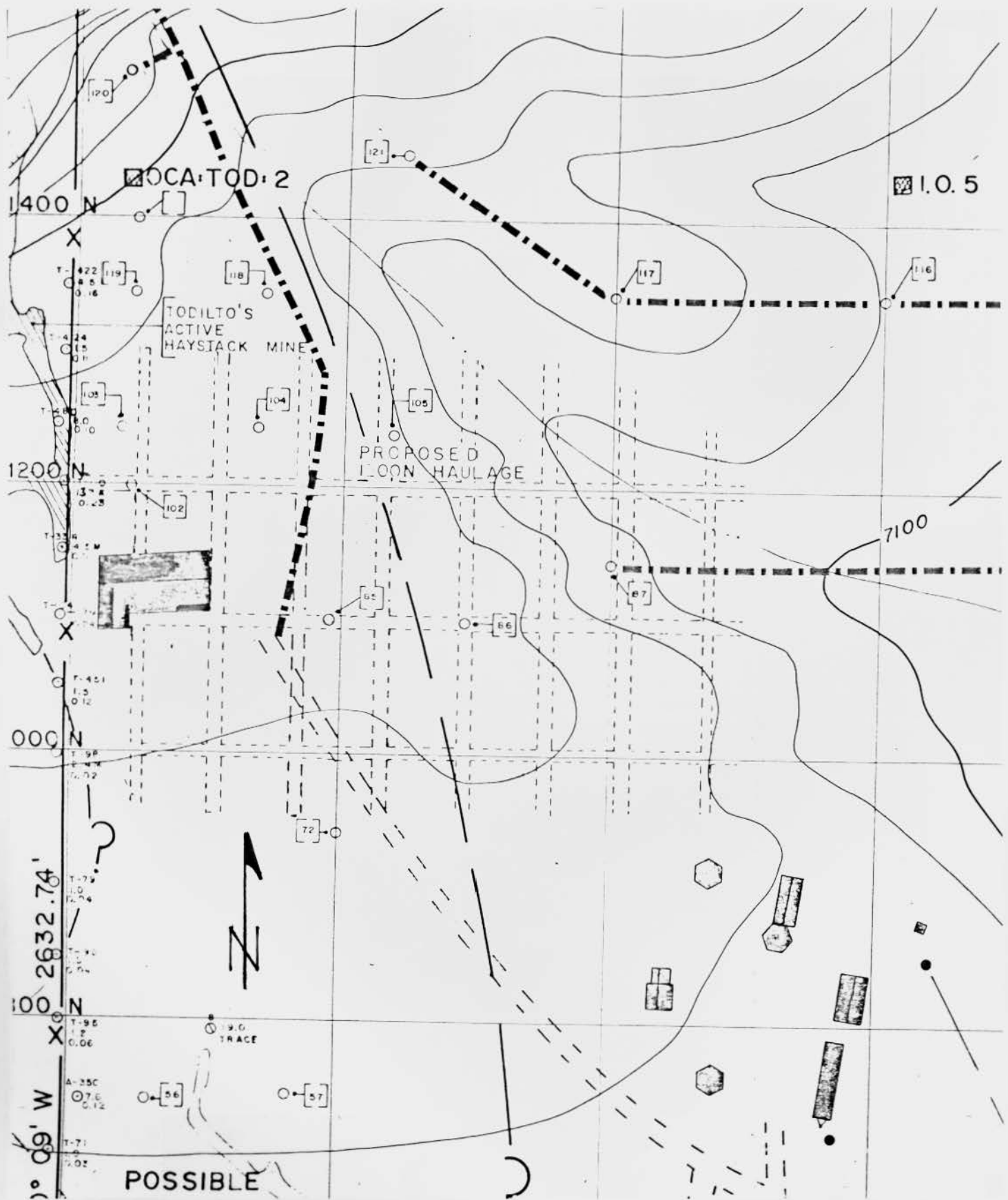
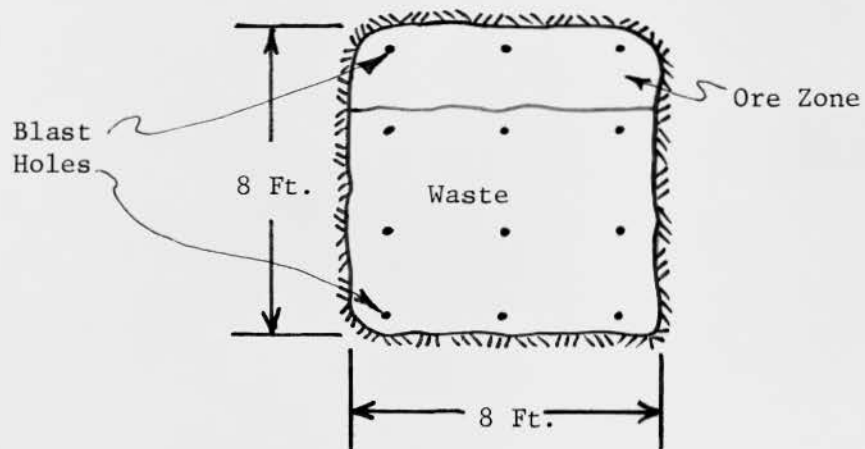


FIGURE 5
PROPOSED SECTION 18 UNDERGROUND
EXPLORATION/DEVELOPMENT

centers. The pillar crosscuts would be seven feet high by ten feet wide. If warranted, pillar extraction would take place after complete development, by slabbing the pillars into the crosscuts and development entries on retreat from the ore zones toward the 1200 NHD.

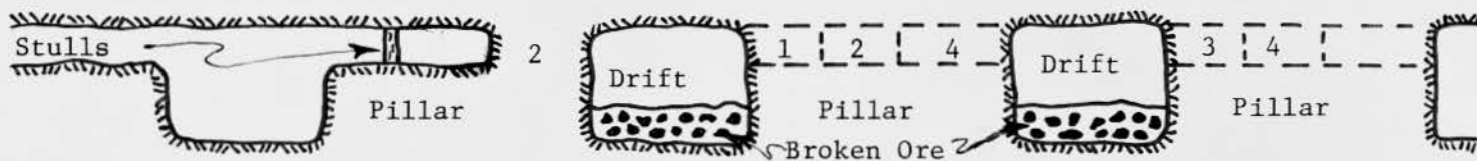
Since the uranium ore deposits are usually situated in the top portion of the Todilto Limestone, and rarely exceed one to three feet in thickness, split shooting would probably be used to carefully control ore dilution during both pillar development and pillar extraction. In pillar development, all drifts and entries would be driven so that the ore zone would be located in the upper portions of the drift cross-sections. Each round would be probed by a grade control geologist who would mark the ore zone on each face with paint (Figure 6). The lower portion of each round, or the waste, would be shot out from under the ore and mucked out; the ore, or upper portion of each round, would then be shot down and trammed to the surface. This procedure would constitute virtual hand sorting of the ore to permit very close grade control with minimum dilution.

The above described development would locate the ore zones in the upper portions of the pillars so split shooting would also be used during pillar extraction (Figure 7). First, a 6-foot round would be drilled and blasted in the ore zone for the entire length of each pillar. The broken ore would be mucked into the crosscut,

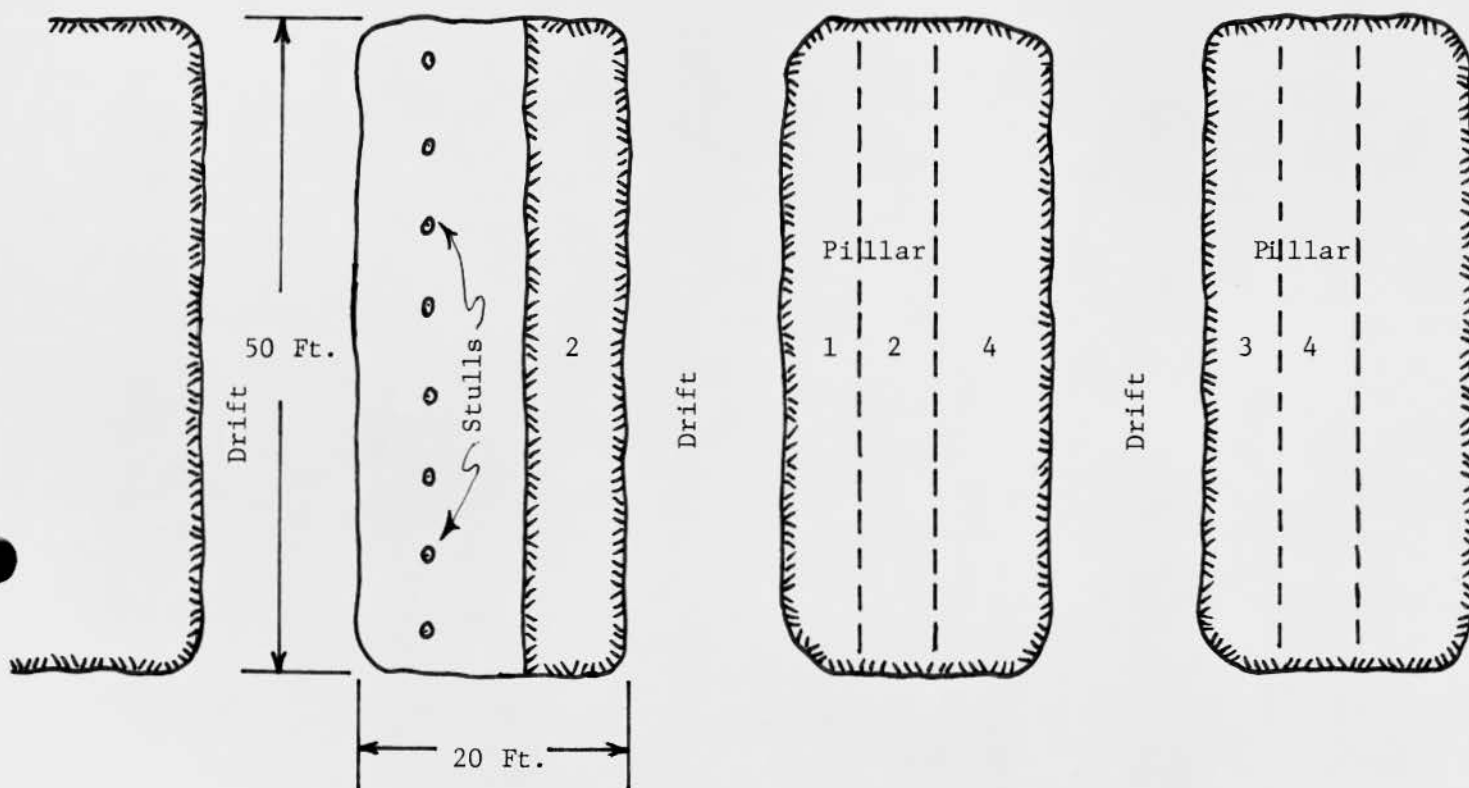


1. Drill entire drift round except for burn cut.
2. Probe all holes and mark ore zone with paint.
3. Drill burn cut.
4. Blast waste and muck out.
5. Blast ore and muck out.
6. Repeat cycle.

FIGURE 6
SPLIT SHOOTING IN DEVELOPMENT ENTRIES
(Not to Scale)



STOPE CROSS-SECTION



STOPE PLAN VIEW

1. Drill and blast 6-foot round (1).
2. Clean pillar top into drift and stull.
3. Drill and blast 6-foot rounds (2).
4. Clean pillar top into drift and stull.
5. Muck out ore in drift.
6. Drill and blast 6-foot rounds (3)
7. Clean pillar top into drift and stull.
8. Drill and blast 6-foot rounds (4).
9. Clean pillar top into drift.
10. Muck out ore in drift.

FIGURE 7
SPLIT SHOOTING IN PILLAR EXTRACTION
(Not to Scale)

and a second 6-foot pillar round would be drilled and blasted from the raised floor of the crosscut. Timber stulls would be used for support between the stope back and the top of the remaining pillar (waste). The second pillar round would be mucked into the crosscut, and then all ore in the crosscut would be trammed to the surface. Two pillars would be worked from each crosscut and the final pillar slab would be recovered when working the next crosscut. None of the waste in the pillars would be removed, and stubs left at the ends of pillars to maintain access in some areas would be recovered during final retreat from the stope if possible.

The development and pillar extraction operations would be accomplished using conventional drilling and blasting with diesel-powered, rubber-tired loaders and haulage trucks. Major underground equipment would consist of pneumatic jackleg drills, Wagner 2-yard load-haul-dump (LHD) units, and Elmac 10-ton haulage trucks. A slusher mounted in the bucket of a LHD unit would be used for mucking in pillar extraction. Ground support would be minimal with the natural pillar supports being supplemented by rock bolts with wire mesh, headboards, or steel mats and timber stulls, and/or cribbing as necessary. The voids or stopes created by removal of the pillars would be left open for eventual caving behind the extraction operations.

Long hole drilling and probing would not be used in the mining

operations because TEDCO has found that it does not facilitate the planning of mine development due to the extremely erratic nature of the uranium deposits in the Todilto Limestone. TEDCO would employ its standard probing procedure for optimum grade control. Initial probing would be done at the face during and/or after each drift round or pillar slab is drilled. This would determine the location of the ore and the most effective way to split shoot each round for minimum dilution. After blasting, each load removed by the LHD units would be probed three times, and the values recorded by the haulage truck driver. At the end of the mucking cycle, the truck driver would then determine which stockpile would receive the load based on the cumulative addition of all probing values that he had recorded. Each load would then be trammed to the surface and placed individually near the appropriate stockpile. After each working shift, the individual piles would be probed again, and then marked as to the proper receiving stockpile. Waste rock would either be gobbled into abandoned workings of the Haystack Mine, or placed on the waste dump near the West Portal.

As previously discussed, the mining operations would be conducted above the water table, and consequently, there would be no need for a system to remove contaminated groundwater from the underground workings to the surface for subsequent treatment and disposal. Ventilation of the mine workings would be accomplished

using the existing ventilation boreholes and latest portal in Section 13 (Figure 3). The downcast venthole is equipped with a 40-horsepower electric fan at the bottom, and it would supply fresh air that would be pushed eastward into the mine workings through flexible ventilation tubing located in the 1200 NHD. The air would be circulated through the workings by various secondary controls (brattices, stoppings, auxiliary blower fans, flexible tubing, etc.), and then exhausted unrestricted through the 1200 NHD to the West Portal.

G. Production Schedule:

Because the proposed mining would essentially be underground exploration, a production schedule cannot be estimated. TEDCO would recover any ore located during the operations, and hopefully, would obtain at least 1,000 tons of ore for mill assay and amenability tests at the United Nuclear - Homestake Partners' milling facility at Ambrosia Lake.

Cutoff grades currently in effect at the Haystack Mine would probably apply to the extension into lease -8396, and are listed below:

0.10%U₃O₈ for ore in split shot round

0.08%U₃O₈ for full face of ore

0.04%U₃O₈ for broken ore

Extended production from lease -8396 would depend on the results of the concurrent surface and underground exploration and

development, and subsequent modification of the interim mining plan.

H. Equipment and Personnel Requirements:

The proposed mining operations would require a limited amount of small equipment such as jackleg drills, auxiliary blower fans, telephones, fire extinguishers, etc. Larger equipment would consist of a slusher, LHD units, underground haulage trucks, and various surface support equipment (front-end loaders, pickup trucks, etc.). All of this equipment is presently located and in use at the active Haystack Mine in Section 13, and a significant increase in the amount of equipment required would not be expected.

TEDCO currently employs a total of seventeen people at its active Haystack Mine. The classification of these personnel are:

- One supervisor
- Two production geologists
- Twelve miners and miners' helpers
- One surface laborer, and
- One mechanic.

The proposed mining operations would not require the employment of any additional personnel.

I. Health and Safety:

The mining operations would be conducted in accordance with the regulations of the New Mexico State Mine Inspector and the U. S. Department of Labor's Mine Safety and Health Administration (MSHA). These regulations govern all aspects of surface and underground mining, including ground control, mine ventilation,

health and safety training, mining procedures, electrical installations, explosives, and approval of mining equipment. Periodic inspections of the mining operations by personnel from these agencies would assure that the operations comply with the applicable regulations.

The mine atmosphere would be contaminated by various hazardous pollutants such as dust from the breakage of the host rock, fumes from the detonation of blasting agents, diesel emissions from the exhausts of the underground mining equipment, and radon gas from the decay of radium in the uranium ore. The maximum allowable concentrations of these pollutants are set by State and Federal regulations, and the mine workings would be adequately ventilated to maintain the quality of the mine atmosphere within those standards. Basically, this ventilation would be accomplished by circulating fresh intake air from the venthole through the active mine workings and exhausting the resulting contaminated air through the 1200 NHD to the West Portal at the surface. The ventilation air would be properly routed through the mine workings themselves by various secondary controls, such as brattices, stoppings, flexible ventilation tubing, and auxiliary blower fans. The ventilation system would be continually adjusted to accommodate the progress of the mining operations, and continuous qualitative and quantitative sampling of the mine atmosphere by the State Mine Inspector and MSHA would assure compliance with the applicable regulations.

In addition to State and Federal mining regulations, the mining operations could be governed by various State and Federal regulations pertaining to health and environmental protection. These regulations pertain to such matters as air and water qualities, water consumption, sanitation, and personnel exposure to radiation. Involved State and Federal agencies include the State Environmental Improvement Division, the State Engineer, the Environmental Protection Agency (EPA), and the Nuclear Regulatory Commission (NRC). TEDCO would comply with all applicable regulations pertaining to such matters.

J. Ore Processing:

As described in "F. Mining Operations", ore would be probed underground, trammed to the surface, probed again on the surface, and then stockpiled according to grade. The three stockpiles presently in use are as follows: "0" Pile for ore with 0.04 to 0.07 percent U_3O_8 ; "1" Pile for ore with 0.071 to 0.10 percent U_3O_8 ; and, "2" Pile for ore with 0.101 percent U_3O_8 or more. Ore from the "0" Pile is used primarily for blending with ore from the "1" and "2" Piles, and most of the blending is done at the Mine. This procedure produces the most economic grade for shipping, which is currently 0.13 to 0.14 percent U_3O_8 under existing mill contracts. The same procedure would be used for any ore recovered from lease -8396, but the ore would be segregated from that recovered from the Haystack Mine in Section 13.

The blended ore would be trucked from the Haystack Mine stockpile area to United Nuclear - Homestake Partners' Mill at Ambrosia Lake. The total haulage distance of approximately 15 miles would consist of about eight miles of dirt road, and about seven miles of paved State Highway 53 (Figure 8). The United Nuclear - Homestake Partners' Mill is the only mill in New Mexico capable of processing limestone ores, and the milling process is different from that for sandstone ores, in that alkaline leaching is used instead of acid leaching. TEDCO sells only the crude ore to either United Nuclear Corporation or Homestake Mining Company, who then tolls the ore through the partnership mill and sells the resulting yellow cake.

K. Reclamation:

Since the underground mining operations would not require any surface disturbing activities within lease -8396, no reclamation is anticipated at this time. Any future surface disturbance within the lease would be included in the corresponding modification of the interim mining plan, together with plans for the reclamation of the areas affected. The 1200 NHD would be sealed at the boundary of lease -8396, according to GS requirements.

L. Related Actions:

The Haystack Mountain area has been the site of uranium exploration and mining activities since the early 1950's; however, most of these activities have occurred on lands not under the

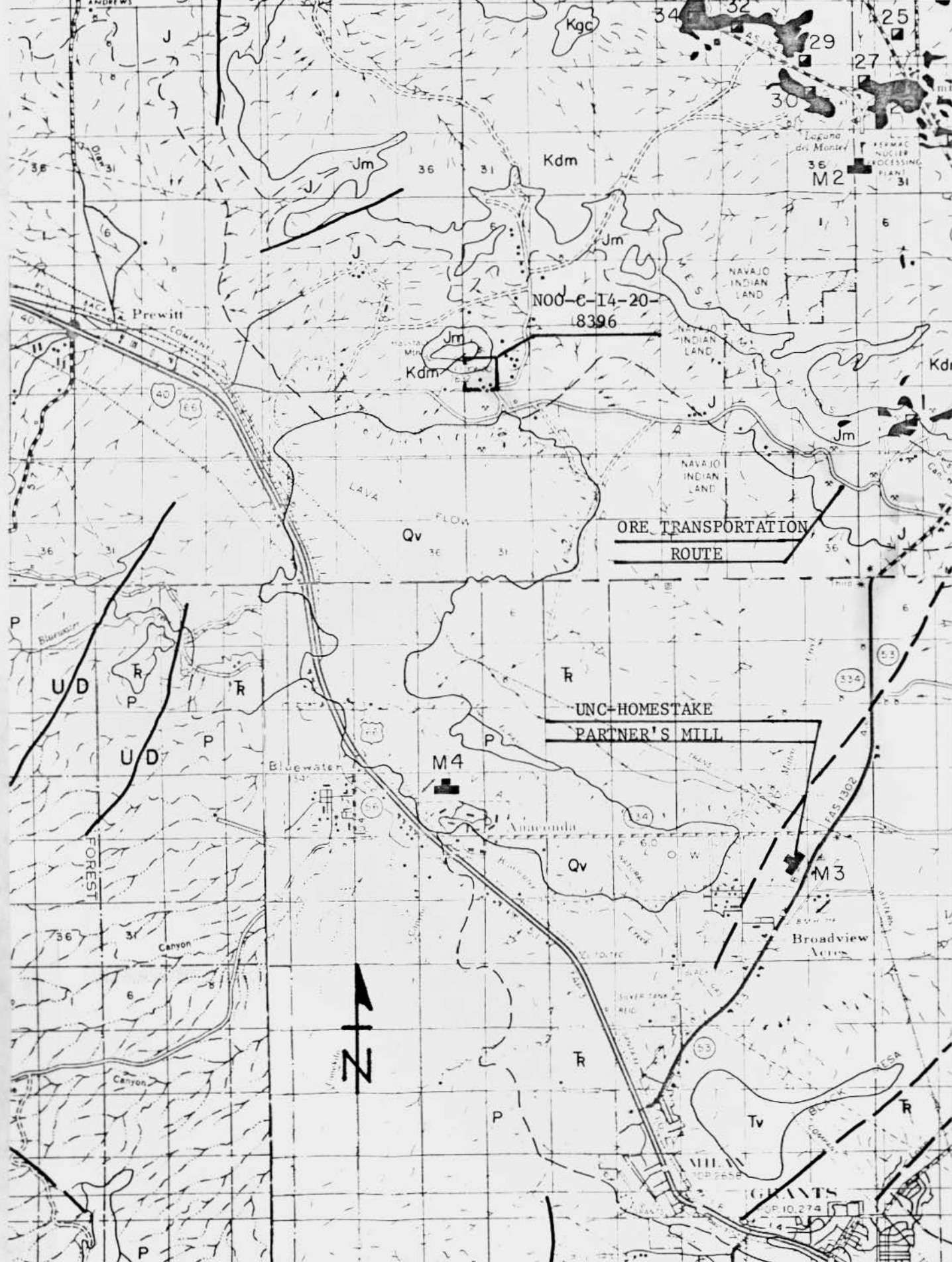


FIGURE 8
ORE TRANSPORTATION ROUTE

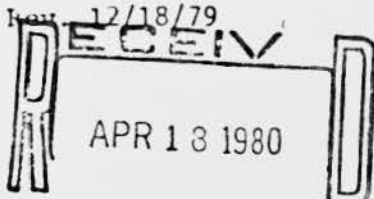
jurisdiction of the GS. According to GS records, there have been 50 uranium mining leases on 41 Navajo Indian allotments in T. 13 N., Rs. 10 and 11 W. Most of these leases have expired or been relinquished, and only five remain in effect at this time. Two of these remaining effective leases are TEDCO's leases -5681 and -8396, and the other three leases are near the Ambrosia Lake area about six miles to the east.

The only effective uranium mining lease in the immediate vicinity of lease -8396 is TEDCO's lease -5681. The exploration plan for this lease was approved June 28, 1976, and present exploration is limited to annual development work required by the lease contact. TEDCO's exploration plan for lease -8396 was approved June 23, 1980, and exploration drilling is now underway. There are no new exploration plans or plan modifications involving Indian lands near Haystack Mountain pending approval at this time.

The only operating uranium mine in the immediate vicinity of lease -8396 is TEDCO's Haystack Mine. As discussed in "C. Lease History", the Federal and Mesa No. 2 Mines were active within the boundaries of lease -8396 between 1951 and 1972. No new mining and reclamation plans or plan modifications involving Indian lands near lease -8396 are pending approval at this time.

APPENDIX A

COPY OF LEASE AGREEMENT



U.S. GEOLOGICAL SURVEY
ALBUQUERQUE, NEW MEXICO

UNITED STATES
DEPARTMENT OF THE INTERIOR
BUREAU OF INDIAN AFFAIRS

Contract No. N00-C-14-20-8396

MINING LEASE INDIAN LANDS
(For Minerals other than Oil and Gas)

Mining Lease, Navajo Indian Allotted Lands

THIS INDENTURE OF LEASE, Made and entered into in quadruplicate on
this 24th day of March, 1980, Between Brown Vandever
" or heirs as the case may be." (Probate No. _____)
of McKinley County, State of New Mexico, part of the
first part, hereinafter called the Lessor, and Todilto Exploration & Development
Corporation
of Albuquerque, State of New Mexico, part of the second
part, hereinafter called the Lessee, under the provisions of the Allotted
Land Mineral Lease Act of March 3, 1909 (35 Stat. 783) and any amendments
thereto.

WITNESSETH:

I. Lessor, in consideration of bonus receipt of which
is hereby acknowledged, of the rent and royalty to be paid, and of the
agreement of the Lessee, herein contained, grants and leases unto Lessee
for the purpose of prospecting for and mining uranium and associated
minerals including in situ solution mining, except coal, oil, gas, and
any mineral not associated with uranium, upon the land described as follows:

Southwest Quarter

Section 18, Township 13 North, Range 10 West.
 , New Mexico Principal, Meridian, Navajo
Indian Allotted Lands, McKinley, County, State of New Mexico
 , and containing 163.38 acres,

more or less. The Lessee may occupy as much of the surface of the leased land as is necessary to carry on the work of exploring for, developing, mining, producing, processing and in situ recovery (solution mining), milling subject to the provisions of 25 CFR 131 and any other applicable laws and regulations, marketing, and removing said minerals, including storing subject to payments to be made as hereinafter set forth. Subject to the limitations hereinafter provided, Lessee shall have the right and license in connection with the operation of mining on the leased land to construct thereon buildings, pipelines, plants, tanks and other structures used or useful in the production, processing and transportation of said minerals; make excavations, openings, stockpiles, ditches, trains, roads, railroads, transmission lines, and other improvements used or useful in said production, processing and transportation; produce electrical power for its own use, erect and operate power lines, place machinery and other equipment and fixtures upon the leased land; use and transport water developed by Lessee on the leased land and any other water made available to Lessee; prepare for market, remove, process, and sell minerals; do all other things upon said leased land that may be necessary to carry on the mining operations hereunder, including the right of ingress and egress; however, the rights contained herein do not include the right to permanently dump or dispose of waste products of mining and milling on the surface of the leased lands.

(a) Survey of Leased Premises.

Within 180 days of the approval of this lease, Lessee at its own expense shall have the leased land surveyed by a registered surveyor, the boundaries posted with substantial monuments and a tie established with the nearest United States Public Survey marker. A certified plat map of the leased land shall be furnished to the Area Director in quadruplicate and two additional copies furnished to the Supervisor.

II. TERM. Subject to the other provisions herein contained, this lease is for a term of 10 years from the date of its approval and as long thereafter as the minerals specified are produced in paying quantities.

III. DEFINITION. Area Director refers to the official in charge of the Navajo Area Office, Window Rock, Arizona, or his authorized representative. The Secretary refers to the Secretary of the Interior or his authorized representative. Supervisor refers to the Area Mining Supervisor, U.S. Geological Survey, Albuquerque, New Mexico, or his authorized representative.

IN CONSIDERATION OF THE FOREGOING, THE LESSEE AGREES:

IV. ROYALTY. To pay or cause to be paid to the Area Director, with copies of the statements to the Supervisor, for the use and benefit of the Lessor royalties calculated as specified in Exhibit "A" attached hereto and by reference made a part hereof. Such royalties are payable not later than the 25th day of the succeeding month for which royalties are due.

V. MINIMUM ROYALTY. A minimum annual royalty of \$20.00 per acre shall become due and payable beginning with the date of approval of this lease and thereafter \$20.00 per acre on each anniversary date of the approved lease. If there is production during the lease year, the minimum royalty shall be credited against actual royalty during such year, but no other year. If the lease is surrendered or cancelled, no advance royalty paid to Lessor will be refunded.

VI. ANNUAL RENTAL. To pay or cause to be paid to the Area Director for the use and benefit of the Lessor, in advance, beginning with the date of approval of the lease, as annual rental, the sum of \$5.00 per acre for the first lease year and thereafter \$5.00 per acre on each anniversary date of the approved lease. The rent shall not be credited against royalties accruing to the Lessor under this lease. If the lease is surrendered or cancelled, no rent accruing to the Lessor will be refunded.

VII. ADJUSTMENT OF ROYALTY. Royalty rates shall be subject to reasonable adjustment by the Secretary two years after commercial production begins and at the end of each successive five year period thereafter, based on market conditions as supported by evidence from the field.

The Lessee agrees that the Secretary, for the purpose of determining the royalties due hereunder, may establish reasonable minimum values for the minerals produced. Due consideration will be given to the highest price paid to producers for minerals of like quality produced from the same general area, the price received by the Lessee, posted prices, and other relevant matters, including information provided by Lessee. At no time shall the adjusted royalty rate be less than the rate established two years after commercial production begins, notwithstanding any other provision of this lease.

VIII. EXCAVATION, WASTE AND CONSTRUCTION AREA. It is further agreed that in addition to all payments of bonuses, royalties and rentals heretofore set forth, the Lessee shall pay to the Area Director for the use and benefit of the Lessor, TWO HUNDRED DOLLARS (\$200) per acre for each acre and a proportionate amount for each part of an acre within the leased land used for permanent construction, open-pit mining or dumping of overburden or waste products from mining and milling subject to the provisions of Article I and Article X(6). This amount shall become due and payable at the end of the lease year in which the use of the acreage commences and shall be payable one time only. Before any such use commences, lessee shall in the plan required in Article X(6) hereof, furnish to the Secretary a written procedure for restoring the land.

The Lessee agrees to pay to the Area Director for the use and benefit of the Lessor, TWO HUNDRED DOLLARS (\$200) per acre for all land used for campsite purposes within the leased premises, it being understood that the payment of \$200 per acre is in addition to all other payments required under this lease and is a sum which shall be charged only once for campsite acreage. The campsite selected shall be the minimum acreage necessary for the operation and shall not include a complete and permanent housing and community development for Lessee's employees.

IX. OWNERSHIP OF WASTE MATERIAL. Lessee may remove to other lands overburden and waste materials extracted from the leased land or waste materials which are residual waste products of processed ores from the leased land; provided, if minerals or by-products are removed or produced from such materials by, or for, Lessee, Lessee shall pay Lessor royalty as provided under the provisions of this lease.

X. PROTECTION OF ENVIRONMENT AND RESTORATION OF SURFACE.
The Lessee agrees to preserve and protect the natural environment conditions of the land encompassed by this lease, or land affected by his exploration or mining operations, and to take such corrective actions as may be necessary within the scope of normal soil, stream and air pollution practices as follows:

(1) Conduct operations so as not to permanently pollute any surface or subsurface fresh water supply.

(2) Control water supplies in conformity with existing Federal and applicable Tribal laws and in all cases hold erosion and flood damage to a minimum.

(3) Abide by State, Federal, and applicable Tribal Laws, Regulations or Codes applicable to water resource utilization.

(4) Terrace and landscape waste disposal areas in a reasonable manner at his own cost and expense. The landscaping shall include, but is not limited to, the planting of grasses, shrubs, and other vegetation which will partially screen the area from view and control water and wind erosion. The surface of any waste dumps shall be left reasonably flat, and tailings will be covered with soil to a depth that will permit the early establishment and propagation of vegetation upon the completion of use of the leased land or said waste or tailings, dumps or deposits.

(5) Conduct operations that will minimize air pollution which may result from stripping, mining, milling, hauling, leaching, or waste disposal, in conformity with applicable existing or future Federal and Tribal laws, and regulations or codes.

(6) As soon as practicable after the issuance of the lease, and before the commencement of any surface-disturbing activities, the Lessee shall submit a plan of implementation which shall indicate how the previously agreed to stipulations of environmental preservation contained in this Article X will be carried out. The plans of implementation shall be in conformance with 25 CFR 177.6 and 177.7 and shall be submitted to the Supervisor, and Area Director for approval,

(7) Radioactive waste material shall be treated and disposed of utilizing the latest available technology as set forth in and subject to the written plan submitted and approved pursuant to Article X(6), which would include such other government agencies responsible for radiation control and disposal.

(8) Within 30 days after each calendar year the Lessee agrees to file with the Supervisor and the Area Director, a report showing the acreage (surface) disturbed, the acreage rehabilitated, the method of rehabilitation and acreage graded and backfilled.

XI. GOVERNMENT RESERVES RIGHT TO BUY MINERALS PRODUCED. In time of war or other public emergency, any of the executive departments of the United States Government shall have the option to purchase at the posted market price on the day of sale, all or any part of the substance or substances produced under this lease.

XII. DILIGENCE, PREVENTION OF WASTE. Lessee agrees to exercise diligence in the conduct of prospecting and mining operations, to carry on development and operations in a workmanlike manner and to the fullest possible extent; to neither commit nor suffer to be committed waste upon the leased land; to comply with the applicable laws of the state in which the leased land is located; to take appropriate steps to preserve the property and provide for the health and safety of workmen; to surrender and return promptly the leased land upon the termination of this lease to whomever is lawfully entitled thereto in as good condition as when received. If the payments agreed upon by this lease have been made and the other lease terms and applicable regulations have been complied with, the office fixtures and records, personal property, tools, pumping, drilling equipment, boilers, engines, and mining machinery may be removed by the Lessee at any time before 120 days after the lease expires by forfeiture or otherwise. All permanent buildings shall remain the property of the Lessor unless the Lessor requires the removal of same; in such event the Lessee shall remove the buildings within the aforementioned 120 day period. The Area Director may grant reasonable extension of time for removal of such equipment and buildings.

XIII. FOREST PROTECTION. The Lessee agrees:

(1) To submit in advance to the Area Director for approval, a site development and layout plan, construction plan and any revisions thereto.

(2) Not to cut, destroy or damage timber without prior authority of the Area Director, such authorization to be made only where required by the pursuance of necessary mining operations.

(3) To pay for all such timber cut, destroyed or damaged at rates prescribed by the Area Director, such rates to be determined on the basis of sales of similar timber in the vicinity.

(4) Not to interfere with the sale or removal of timber from the land covered by this lease by contractors operating under an approved timber sales contract now in effect or which may be entered into during the period of this lease.

(5) To do all in its power to prevent and suppress forest, brush or grass fires on the leased land and in its vicinity, and to require its employees, contractors, subcontractors and employees of

contractors or subcontractors to do likewise. To place its employees, its contractors, subcontractors and the employees of such contractors or subcontractors employed on the leased land at the disposal of any authorized officer of the Bureau of Indian Affairs for the purpose of suppressing forest, brush or grass fires with the understanding that the payment of such services shall be made by the United States at rates to be determined by the Area Director, which rates shall not be less than the rates of pay prevailing in the vicinity for services of similar character; provided that no payment shall be made for services rendered in the suppression of fires for which the Lessee, its employees, contractors, or subcontractors or the employees of such contractors or subcontractors are responsible.

(6) To pay for the loss of all timber ten (10) inches or more in diameter occasioned by fires for which it or any of its employees, its contractors, subcontractors or the employees of such contractors or subcontractors are responsible for the start or spread, the assessment of the value of such damages to be determined by the Area Director on the basis of the value of such timber on sales of similar timber in the vicinity. Also, to pay liquidated damages for all young timber less than ten (10) inches in diameter destroyed by such fires and to pay all costs for the suppression of fires for which it or any of its employees, contractors or subcontractors, or the employees of such contractors or subcontractors are responsible.

(7) Not to burn rubbish, trash or other inflammable materials, except with the consent of the Area Director and not to use explosives in such manner as to scatter inflammable materials on the surface of the land during the fire season, except as authorized to do so by the Area Director.

XIV. DEVELOPMENT. The land described herein shall not be held by the Lessee for speculative purposes, but for mining the minerals specified. The Lessee shall spend annually in development and improvements upon the leased land, or for the benefit of the leased land, not less than \$15.00 per acre. The Lessee shall file with the Area Director an itemized statement, in duplicate, within 30 days after each calendar year, of the amount and character of the development expenditures during the calendar year. The statement must be certified under oath by the Lessee or its agent. If the Lessee fails to diligently develop or operate the mine, or produce minerals therefrom, this lease will be subject to cancellation, except when development, operations or production have been prevented by a strike, an Act of God, administrative or judicial restraint not attributable to the Lessee, or other cause beyond the reasonable control of the Lessee.

XV. UNITIZATION. In the event two or more leases comprise a single logical mining unit in accordance with maps and plans showing the proposed mining methods and the plant layout which have been submitted by the Lessee and approved by the Supervisor, then the Lessee may unitize such leases under such terms and conditions as may be agreed upon by the Lessor and the Lessee with the consent of the Area Director.

XVI. MONTHLY STATEMENTS. To keep an accurate record of the mining operations, showing the sales, prices, dates, purchasers, the quality and amount of minerals mined, and removed, the gross receipts, transportation, mining and milling costs and to furnish the Supervisor and the Area Director sworn monthly reports thereon before the twenty-fifth of the succeeding month. All royalty and advance rental due shall be a lien on any improvements, tools, machinery and other chattels used in the operation and upon the unsold minerals obtained under the lease. An audit of the accounts and books of the Lessee shall be made annually. Said audit shall be prepared and completed by a certified public accountant hired at Lessee's expense. The Lessee shall furnish free, through the Area Director, copies of the audit to the Secretary within 30 days after the completion of each audit. The audit shall be completed within 120 days from the lease anniversary date.

XVII. REGULATIONS. To abide by and conform to the terms of this lease and all regulations of the Secretary now or hereafter in force and relative to such lease including, but not limited to, 25 CFR 172 and 177, and 30 CFR 231, except as qualified herein. Rate of royalty, the annual rental or the term of the lease may not be changed by a future regulation without the written consent of the parties to this lease except as provided in this lease.

XVIII. ASSIGNMENT OF LEASE. The Lessee shall not assign this lease or any interest therein by an operating agreement including agreements providing for payment of overriding royalty. The Lessee shall not sublet any portion of the leased land before restrictions are removed, except with the approval of the Secretary. If this lease is divided by the assignment of the entire interest in any part of it, each part shall be considered a separate lease under all the terms and conditions of the original lease.

XIX. BOND. To furnish to the Area Director an acceptable surety bond made payable to the Area Director for the benefit of the Lessor guaranteeing lease term compliance, as provided in the applicable Federal Regulations. The right is reserved to the Secretary to stipulate the amount of a bond required for reclamation purposes.

XX. LIQUOR. The Lessee further agrees that it will not use or permit to be used any part of said leased land for any unlawful conduct or purpose whatsoever; that it will not use or permit to be used any part of said leased land for the manufacture, sale, gift, transportation, drinking, or storage of intoxicating liquors or beverages in violation of existing laws relating thereto, and that any violation of this clause by the Lessee or with its knowledge, shall render this lease voidable at the option of the Area Director.

XXI. INSPECTION. The leased land, appurtenances, and all books and accounts of the Lessee may be inspected by the Lessor, his agents, or the Secretary.

XXII. DISPOSITION OF MINERALS AND SURFACE.

(a) The Lessor expressly reserves the right to lease, sell or otherwise dispose of the minerals not subject to this lease and the surface of the lands in this lease under existing law or laws hereafter enacted, such disposition to be subject to the right of the Lessee to use as much of the surface as is necessary in the extraction and removal of the minerals from the leased land.

There is further reserved to Lessor, after consultation with Lessee, the right to construct, use and maintain canals, pipe lines and syphons on and across said lands; provided such use and facilities will not unreasonably interfere with Lessee's mining operations and rights under this lease.

(b) Lessor may hereafter grant to other persons, firms or corporations oil and gas leases, non-mineral leases, licenses, oil and gas prospecting permits, or rights-of-way upon the leased land; oil and gas drilling and producing activities may be carried out concurrently with Lessee's mining operations; provided, however, that no oil rights or installations of any kind shall be situated so as to unduly interfere with Lessee's right to carry on its mining operations and related activities; and provided further, that no well may be drilled for oil or gas at any location which, in the opinion of the Area Mining and Oil and Gas Supervisors, would result in undue waste of mineral deposits or constitute a hazard or interfere with mining operations being conducted by Lessee on the leased land. The provisions of this Article XXII shall be included in any oil and gas lease, license, prospecting permit or right-of-way granted by Lessor on the leased land.

(c) Notwithstanding any other provision of this lease, the Lessor reserves the right without liability of any kind, except as provided in this lease, to grant to qualified applicants rights-of-way for pipelines for the transportation of oil, gas, helium or petroleum products, for power lines, telephone, telegraph and water lines incident to the operations of such pipelines, across the lands embraced in this lease, upon the condition that prior to the granting of any such right-of-way the applicant therefore, as a condition precedent to such grant, shall file with the Area Director the following expressed undertaking in writing for the express benefit of Lessee:

1. That applicant will either bury the pipeline to a sufficient depth or at a place to be designated by Lessee, construct and maintain, at applicant's expense, a ramp, so that loaded vehicles, including Lessee's heavy mining equipment, may pass unhindered over said pipeline. Whenever said pipeline is relocated pursuant to subsection (2) of this section (c) of this Article XXII, applicant will either bury the relocated pipe or promptly construct and maintain, at its own expense, a suitable ramp in a new place designated by Lessee. Lessee shall not be responsible for damage to said pipeline caused by such vehicles and equipment crossing said pipeline.

2. That applicant will make adequate provisions in the construction of said pipeline, power transmission lines, telephone, telegraph or water lines so that, in the event it is determined by Lessee that mining operations should be conducted within the area of the right-of-way or that a power or industrial plant or other building should be built in such area, the line can be expeditiously relocated so as not to interfere with Lessee's operations; and applicant shall make such relocation, including any necessary bridging, at its own expense, within six (6) months from receipt of notice in writing from Lessee requesting such relocations. If applicant fails to make such relocation within such six (6) month period, Lessee may relocate the line without liability and at the expense of applicant.

3. Applicant will, at all times, keep, maintain and repair at its own expense, the portion of the pipeline crossing the leased land in such condition as not to injure, endanger or interfere with Lessee or any person or property on or about the leased land.

4. That applicant will promptly pay any lawful taxes, charges or assessments placed upon or levied against the pipeline or improvements or appurtenances in connection therewith; provided that applicant may contest the validity or amount of any such tax, charge or assessment and shall not be considered in violation of this stipulation until a reasonable time after final determination of such contest by a competent tribunal.

5. That applicant shall be responsible for any damage, loss of property, injury or death of any person directly or indirectly caused by the enjoyment of pipeline rights, and shall hold Lessee harmless and indemnify it against any and all claims therefor; and shall further hold Lessee harmless from and indemnify it against damage to or loss of property belonging to applicant or injury to or death of any person on or about the pipeline crossing on behalf of or at the invitation of applicant.

6. That applicant shall specify in writing to the Lessee the address to which all notices and requests may be mailed.

(d) LESSOR AGREES THAT:

1. No pipeline right-of-way granted across the leased land shall exceed fifty (50) feet in width. Rights-of-way for power lines and other purposes granted across the leased land shall be of such widths as will accommodate themselves to Lessee's permitted use of the leased land.

2. Lessee shall be given timely written notice by the Area Director of any application for rights-of-way over the leased land before the same are granted.

3. An executed duplicate of the undertaking specified in section (c) above and a true copy of the grant of rights described therein shall be furnished Lessee upon the granting of any application for rights over the leased land.

XXIII. SURRENDER AND TERMINATION. The Lessee may surrender this lease or any legal subdivision thereof by filing with the Area Director on or before the anniversary date of the lease a written relinquishment. If the lease has been recorded, the Lessee must file a recorded release with the Area Director on or before the anniversary date of the lease. The relinquishment shall become effective on the date it is filed with the Area Director, subject to continued obligation of the Lessee and his surety to pay all accrued rentals, royalties, and other payments due and to recondition the premises in accordance with the terms of this lease and the regulations. The Lessee shall, within 30 days after the termination of this lease, furnish the Area Director detailed and complete written reports of the exploration done and all information concerning the nature and value of the minerals. (25 CFR 172.23)

XXIV. RELINQUISHMENT OF SUPERVISION BY THE SECRETARY OF THE INTERIOR. Should the Secretary at any time during the life of this instrument, relinquish supervision as to all or part of the acreage covered hereby, the relinquishment does not bind the Lessee until the Secretary has given 30 days' written notice. Until the requirements are fulfilled, Lessee shall continue to make all payments due under Articles IV, V and VI. After notice of relinquishment has been received by Lessee, this lease is subject to the following further conditions:

1. All rentals and royalties accruing shall be paid directly to Lessor or its successor in title.

2. If at the time supervision is relinquished by the Secretary as to all lands under this lease, and Lessee has made all payments due under the lease and has fully performed all obligations on its part to be performed up to the time of such relinquishment, then the name of the obligee on the bond given to secure the performance of the lease and on file with the Area Director shall be changed to the Lessor who holds title of record.

XXV. WATER WELLS. Upon approval of the Lessor and the Area Director, the Lessee may, at its own expense, drill and equip water wells on the leased land. The Lessee agrees that at the termination of this lease, all wells with potable water shall be left intact and properly cased upon written approval of Lessor and Agency Superintendent. Lessee may remove all mechanical pumping equipment installed by Lessee at any well within 120 days after expiration of the lease, otherwise such equipment shall become the property of the Lessor.

XXVI. DAMAGES. The Lessee and all of his contractors and subcontractors shall conduct all operations authorized by this lease, including construction, operation or maintenance of any of the facilities on or connected with this lease, so as to prevent unnecessary damage to natural resources, improvements and the environment. On termination of operations under this lease, the Lessee shall make appropriate provisions for the conservation, repair and protection of the property and leave all the areas on which the Lessee has worked in a safe condition, not hazardous to life and limb, all to the satisfaction of the Lessor and the Area Director.

XXVII. LIABILITY FOR DAMAGE. The Lessee and all of his contractors and subcontractors are liable for any and all damages resulting from its operations under this lease, including injury to the Lessor, the tenants, licensees and surface owners, and for any and all damages to or destruction of all property, caused by the Lessee's operations hereunder. The Lessee agrees to save and hold the Lessor and the United States, their employees, licensees, and the surface owner or their tenants harmless from all suits for injury or claims for damages to persons and property resulting from the Lessee's operations under this lease.

XXVIII. ROADS. The Lessee may use existing roads, if any, on the leased land. On application, duly approved in writing by the Lessor and the Area Director, the Lessee shall be entitled to construct and maintain, at its own expense, any additional roads on the leased land necessary for exploration and mining. No part of any such road shall inure to the benefit of the public, and the public shall obtain no rights thereon. If at any time the Lessee does not require the use of any such road for the operations authorized under this lease or upon termination of this lease for any cause whatsoever, the right to use any such road shall cease, and road surface shall be restored to its original condition unless otherwise agreed, and all the rights shall revert in Lessor in accordance with law. The Lessee shall hold the Lessor and the United States harmless and indemnify them against any loss or damage that might result from the negligent construction or maintenance by Lessee of the road.

XXIX. INDIAN LABOR. To the extent allowed by applicable Federal and State laws, the Lessee shall give a priority right of employment and training to members of the Navajo Tribe for all positions for which they are qualified and available and shall pay the prevailing wage rates for similar services in the area. Upon initial hiring and whenever thereafter a job opening occurs, the Lessee, its contractors, and subcontractors, shall give notice of such opening to the Agency Superintendent stating the time and place where job applications will be accepted. Lessee agrees to give priority to employment and training of Lessor and other Navajo Indians for skilled and unskilled, technical and other higher jobs in connection with Lessee's operations under this lease. Except in cases of emergency, no nonmember of the Tribe shall be hired for any job until 48 hours following the delivery of such notice to the Agency Superintendent.

XXX. INSURANCE, SOCIAL SECURITY, TAXES, ETC. The Lessee agrees to carry insurance covering all persons working in, on or in connection with the leased land for the Lessee as will fully comply with the provisions of the statutes of the State of New Mexico covering workmen's compensation and occupational disease, as are now in force or as may be amended. Further, the Lessee agrees to comply with all the terms and provisions of all applicable laws of the State of New Mexico as now exist or as may be amended, pertaining to Social Security, unemployment compensation, wages, hours and conditions of labor; and to indemnify and hold the Lessor and the United States harmless from payment of any damages occasioned by the Lessee's failure to comply with

these laws. The Lessee shall pay all taxes lawfully levied or assessed on the sale, severance, production, extraction or removal of any of the minerals covered by this lease.

XXXI. HEIRS AND SUCCESSORS IN INTEREST. It is further covenanted and agreed that each obligation under this lease shall extend to and be binding upon, and every benefit hereof shall inure to the heirs, executors, administrators, successors of or assigns of the parties to this lease.

XXXII. GOVERNMENT EMPLOYEES CANNOT ACQUIRE LEASE. No lease, assignment thereof or interest therein, will be approved to any employee or employees of the United States Government whether connected with the Bureau of Indian Affairs or otherwise, and no employees of the Interior Department shall be permitted to acquire any interest in such leases by ownership of stock in corporations having leases or in any other manner.

XXXIII. PENALTIES. Failure of the Lessee to comply with any provisions of the lease, or the regulations contained in 25 CFR 172 and 177, and 30 CFR 231, orders of the Area Director, or the orders of the Supervisor, shall subject the lease to cancellation by the Secretary or the Lessee to a penalty of not more than FIVE HUNDRED DOLLARS (\$500) a day for each and every day the terms of the lease, the regulations, or such orders are violated; or to both such penalty and cancellation; provided, that Lessee shall be entitled to notice and hearing within 30 days after such notice, with respect to the terms of the lease, regulations, or orders violated, which hearing shall be held by the Area Director or the Supervisor, whose findings shall be conclusive unless an appeal be taken to the Secretary pursuant to 25 CFR Part 2, 30 CFR Part 290, 43 CFR Part 23 and subtitle B, Chapter II.

XXXIV. CANCELLATION AND FORFEITURE. When, in the opinion of the Secretary, there has been a violation of any of the terms or conditions of this lease before restrictions are removed, the Secretary has the right at any time after 30 days notice to the Lessee, specifying the terms and conditions violated, and after a hearing, if the Lessee shall so request within 30 days of receipt of notice, to declare this lease void and the Lessor may then take immediate possession of the land provided Lessee does not cure its default within 30 days or, if Lessee requests a hearing and does not cure its defaults within 20 days after the final decision resulting from said hearing. After restrictions are removed, the Lessor may use any available remedy in law or equity for breach of this contract by the Lessee. The remedies specified hereunder are in addition to remedies specifically provided in 25 CFR 172 and 177.

XXXV. OBLIGATIONS. While the leased land is in trust or restricted status, all of the Lessee's obligations under this lease and the obligations of his sureties, are to the United States as well as the owners of the land.

XXXVI. PAST DUE PAYMENTS. Any and all payments specified in this lease, including but not limited to royalty and rent unpaid as of the due date shall bear interest at the rate of 10% per annum from the date payments become due until paid and such payments shall not provide exclusion from any default provision of the lease.

APPENDIX I

COPY OF THE PROPOSED PLAN

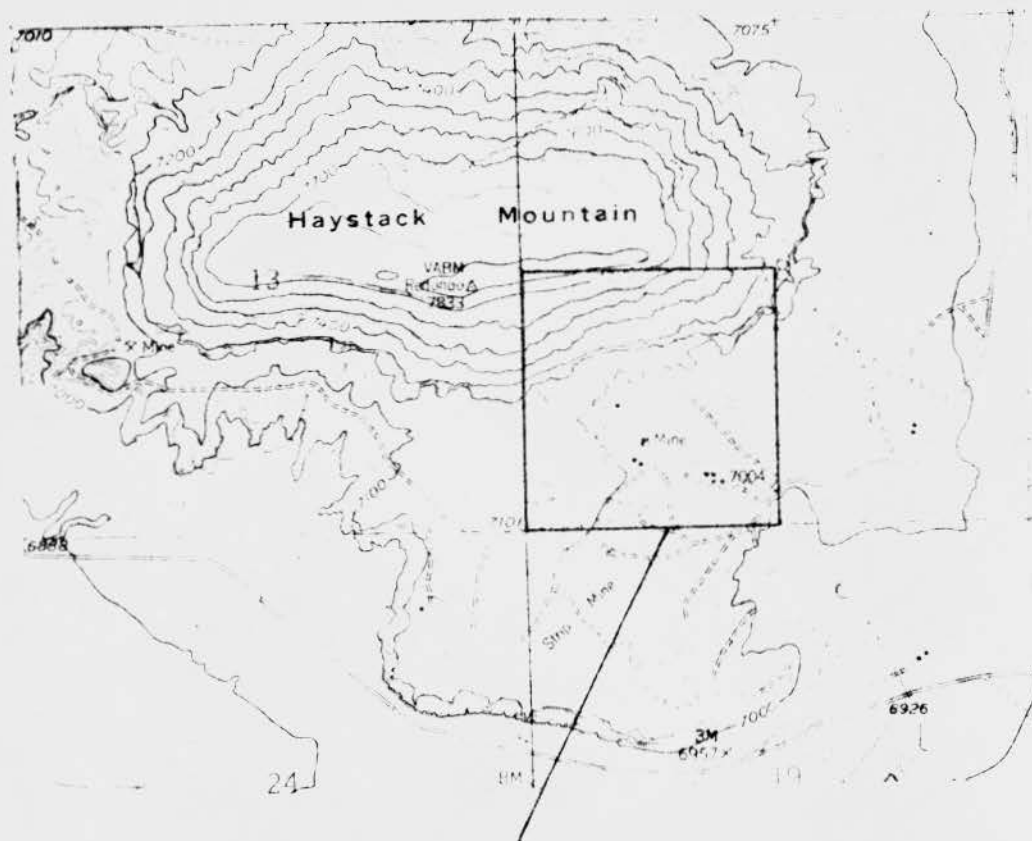
INTERIM MINING PLAN
SW $\frac{1}{4}$, Section 18, T13N, R10W

1. SUMMARY

- 1.1 Todilto proposes to immediately drive its existing 1200 North haulway due east into the Vandever lease. This request is based on the knowledge that the boundary area at the 1200 North haulageway does contain ore immediately at the boundary. Per Map #103-007-015-18-D-14, the proposed drive of the 1200 North haulageway due east would be for a minimum of 300 feet, possibly as much as 500 feet, with turnoffs of the 1200 both north and south following our normal underground development pattern.
- 1.2 This is pure exploration development in the context that apart from the ore face existing at the boundary, we do not know how much ore is on the east side of the boundary. However, per Map D-14, our projected eastern ore zone trend makes the proposed underground development realistic. Because of these factors, exact times or estimated production information cannot be determined at present.

2. GENERAL DESCRIPTION OF EXISTING AREA

- 2.1 Physiographically the proposed mining area is in the Colorado Plateau province. The most prominent feature is Haystack Mountain, which has a maximum elevation of 7,833 feet and is a flat-topped elongated mesa. Elevation in the proposed mining area varies from 6,900 to 7,700 feet.
- 2.2 Geology locally consists of Cretaceous Dakota sandstone, Jurassic Morrison, which includes the Brushy Basin, Westwater Canyon and the Recapture members, the Bluff sandstone and portions of the Summer-ville formation, all which are restricted to exposures along Haystack Butte. Exposures of Jurassic Todilto limestone and Entrada sandstone are found along a bluff below a bench just south of Section 18. Structurally, beds generally dip from 3° to 5° northeast. Minor east-west and northeasterly-trending normal faults displace beds from 1 to 85 feet.
- 2.3 No surface water exists in or around the southwest quarter of Section 18. Several small arroyos cut the area with general drainage to the southeast.
- 2.4 Extensive drilling around the southwest quarter of Section 18 and underground mining in adjacent Section 13 to the west has encountered no ground water. If any ground water aquifers do exist, they would be stratigraphically far below any of the mine workings and would not be affected by this operation.
- 2.5 The southwest quarter of Section 18 lies in T13N, R10W, of McKinley County. Access to the area can be reached by three major dirt roads from either Highway 53 or old U.S. 66 (see Figure 1, following page).



Location of SW 1/4 Section 18 T13N, R10W

Figure 1.

- 2.6 Population centers near the southwest quarter of Section 18 are Prewitt, approximately six miles southwest, and Grants, approximately 25 miles southeast. Population in the immediate area is approximately 20 people with six of these people working for Todilto's Haystack Mine. These people will not be affected by the proposed underground operation.
- 2.7 An archeological study is now being developed for Southwest 18, and once it is completed, it will be submitted to your office. The only other archeological manifestations known in the area are found in the N $\frac{1}{2}$ N $\frac{1}{2}$ of Section 13, and were cataloged in UNM proposal #101-103V. These will not be affected by the proposed interim mining plan.
- 2.8 The only other mines in the area consist of both an intermittent Haystack open-pit operation on Section 19 and the Haystack underground operation on Section 13. Both operations are owned and operated by Todilto Exploration and Development Corporation.
3. LEGAL DESCRIPTIONS OF LANDS IN AND AROUND SUBJECT LEASE
- 3.1 Mineral rights to the southwest quarter of Section 18 belong to Brown Vandever, who was allotted the land from the Bureau of Indian Affairs. If the southwest quarter of Section 18 goes into production, Mr. Vandever will receive 100% of the royalty based on the royalty rate given to us in the approved lease.
- 3.2 Todilto also has mineral rights to BLM land in the northwest quarter of Section 18, which are staked as the Tess 1 through 10 claims. Additionally, mineral rights to the southeast quarter, the south half of the north half of Section 13, are owned by the Department of Energy and are leased to Todilto. The surface rights are reserved for the use of the Navajo Nation by the Public Land Order, #2178, dated August 26, 1960. Todilto additionally holds BIA Lease #N00-C-14-5681 on the north half of the north half of Section 13. Todilto holds mineral rights to the north half of the northwest quarter of Section 19, T13N, R10W, and the southwest quarter of Section 13, T13N, R11W, by lease from the Santa Fe Pacific Railroad Company.
4. SURFACE COVER
- 4.1 Surface cover consists of blow sand on the bench area with talus of Dakota sandstone blocks and other unconsolidated formational material along the southeast side of Haystack.
5. CLIMATOLOGY
- 5.1 The climate is semi-arid, with an average annual precipitation of about 12 inches, occurring mostly as rain in July and August. Snowfall is light and varies between a few inches to one foot with intermittent melting to bare ground most winters.

6. FLORA AND FAUNA

- 6.1 Vegetation is extremely sparse and consists of an upper Sonoran grassland community with a scattered population of Pinon and Juniper.
- 6.2 Wildlife consists of rabbits, lizards, a variety of birds, and an occasional coyote.
- 6.3 No known endangered species of flora and fauna inhabit the Vandever lease.

7. DEVELOPMENT PHASES

- 7.1 The original discovery of economic uranium in the Grants district was made on Section 19, immediately south of the Vandever lease. This deposit was developed and mined by the Haystack Mountain Development Company in the early 1950's. Subsequent to that, several different local lessors held and produced from the area by following mineralized trends to the northwest.
- 7.2 The Vandever lease was mined sporadically from 1952 to August, 1966. The extent of development included two decline portals and one trench (see Map D-14). The original mining was done by the Federal Uranium Company, and was later mined by Cibola Mining till the final abandonment in August of 1966. No further work has been done on the property since then.
- 7.3 Todilto has mined the area immediately west of the west boundary of the lease since 1975. This mine commenced as an open pit producer, followed by two separate underground production areas. Map D-14 shows the "Haystack East Side Underground", located at 300 North and 00 East (the Vandever lease boundary). The East Side Underground mined area access portal has subsequently been buried during refilling of the open pit, and is no longer accessible.
- 7.4 Map #103-007-015-M-15 shows the extensive "West Portal" underground development. This area of the Haystack Mine commenced in November 1975 and has sustained the Haystack production ever since. Three separate mineralized zones are recognized at Haystack. Referring to Map M-15, they are the Main Zone Underground-West Pit trend, the Manto Zone-Main Pit trend, and the East Zone trend.

8. NATURE AND EXTENT OF ORE DEPOSITS

- 8.1 Generally the ore deposits currently being mined are "Manto"-type deposits. Mineralization is usually confined to the top portion of the Todilto limestone and rarely exceeds 1 to 3 feet in thickness. Mineralization is primary uraninite with some secondary tyuyamunite.
- 8.2 The Haystack deposits, which are actually several small-to-medium size orebodies, have an apparently 10° North to 20° West trend. These trends are depicted on Maps D-14 and M-15. Because we have yet

to drill the subject lease, accurate evaluations of any orebodies cannot be made. However, based on old mining information from the Vandever lease, the mined orebodies appear very similar to the ones currently being mined by Todilto on Section 13.

- 8.3 No geological hazards, such as toxic or explosive gases, are known to exist, nor are any unusual conditions expected.

9. PROPOSED INTERIM MINING PLAN

- 9.1 Exploration and development drilling is planned and can be found in the exploration plan. No underground longholing will be done.
- 9.2 The proposed mining methods will be to drive the 1200 North haulage-way east across the boundary a minimum of 300 feet, possibly as much as 500 feet, with both north and south turn-offs from the 1200 North following our usual underground development pattern. Since the operation will be underground, no surface disturbance will occur.
- 9.3 Mining methods at Haystack and the extension onto the lease, if approved, is load/haul/dump, rubber-tired equipment, using two-yard Wagner loaders and ten-ton Elmac underground trucks. The 1200 main haulageway is run as a 9' X 11' working to allow adequate ventilation and equipment space. The eastern extension onto the Vandever lease would be ventilated from the vent hole indicated on Map M-15 at approximately 1200 North-200 West. This is a down draft forced vent hole with a 40 HP electric fan at the bottom, and air would be pushed east into the extension through vent bags, exhausting back to the west out the 1200 portal, unrestricted. Map D-14 shows our standard exploration/development outline. Referring to M-15, 100-foot drifts east-west are followed by 60-foot centerline entries north-south. These are 8' X 8' workings. In those areas encountered by ore, the 60-foot entries and resulting pillars between them are then split on 33-1/2-foot centers, with 7' X 10' workings, resulting in fully-developed pillars 60' X 20' in size. Of course, once an area is completely developed, we retreat out of that zone, pulling the pillars as we back out.
- 9.4 Since the ore is generally a flat, tabular body, both exploration underground and mining generally require split shooting. In this process in the 8' X 8' entries as an example, we commonly shoot the waste out from underneath the ore, muck this out clean and then drop the ore by shooting the three back holes which were left unblasted during the waste shot. The ore is then mucked out individually, put on the ore stockpile by grade, and the cycle repeated.
- 9.5 Depth to surface in the proposed exploration area will be approximately 150 to 180 feet, getting much deeper to the north and slightly more shallow to the south. Referring to Map M-15, the Haystack side of the Todilto bench area is extensively mined and has never caved to the surface, even where it is relatively shallow. The area at 900 North-400 West is stoped out and has caved internally in isolated stopes. The typical stope back release that we have experienced is the caving of a red shale unit in the previous back. This caving

produces arching of the back some 10 to 20 feet, and in all cases seen, has stopped once the sandstone of the Summerville formation is reached. Several caved stopes can be seen underground by USGS personnel at any time. None, without exception, of these stopes has ever caved to the surface or has there ever been any cracking of the surface or any surface disturbance of any kind. The aforementioned 900 North-400 West stope area has only approximately 80 feet of back from the ore horizon to the surface, and caving underground of even this shallow ground has never disturbed the surface. Thus, we are completely confident no caving to the surface or cracking of any kind will result in the requested exploration area, even if it is fully mined. Of course, we do not know how much ore is under the house near the 1200 North area, but in any case, the house clearly will not be disturbed in any way.

- 9.6 All waste mucked from the development will be taken off of the lease and gobbled in the old Haystack workings where practical or otherwise dumped on the Haystack waste dump, per Map M-15.
- 9.7 The mining sequence is purely explorational development based on known ore at the boundary and the possible eastern ore zone trend. The proposed mining plan will be followed as indicated with later modifications based on results from the surface drilling program.

10. U308 PROBING TECHNIQUE BY TODILTO

- 10.1 Todilto Exploration uses a three-system probing technique to assure the most accurate grade control.
- 10.2 The initial probing is done at the face during and/or after a round or slab is drilled. The purpose is to determine where the ore is in the face and what will be the most effective way to shoot the round with minimum dilution. In most cases, Todilto split shoots where necessary per the attached geologists' procedure sheet (Figure 2, following page).
- 10.3 Once the round or slab is shot, removal of the waste and/or ore begins. Each load that the loader takes out is probed three times and the values recorded by the truck driver. At the end of the loading cycle the truck driver then makes a determination as to which stock pile the load will go on. This is based on the cumulative addition of all values he has recorded.
- 10.4 Each load is then brought to the surface and dumped individually near the appropriate stockpile. If the rock is waste it is immediately dumped on the waste dump or gobbled underground. After each working shift the individual piles are then reprobed and marked as to what stockpiles they will go to.

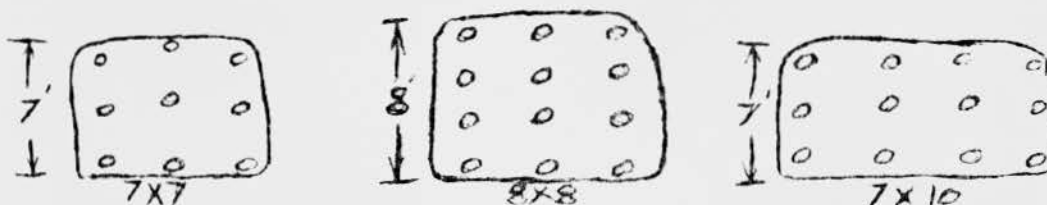
11. CUTOFF GRADES AND ORE STOCKPILES

- 11.1 Cutoff grades currently used by Todilto are: probing blast holes before breaking the ore in a split shot, 0.10% U308, and in a full face

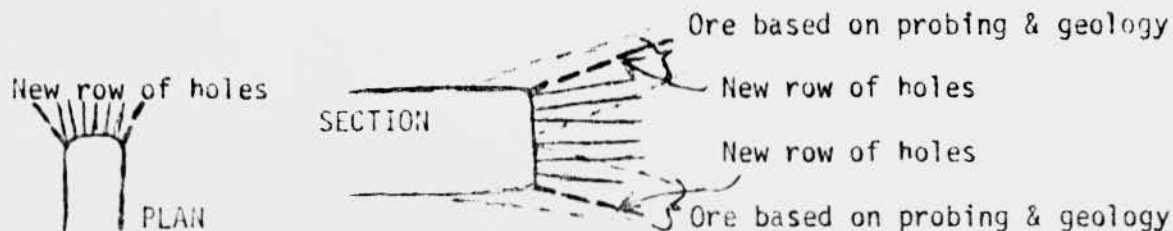
FIGURE 2

GRADE CONTROL - BLAST - PROBING PROCEDURE

1. Any face 7' high or higher must be drilled in a 9-hole or 12-hole pattern as below in diagram and probed prior to locating burn cuts to determine if it should be split shot or not.



2. Any face less than 7' high will not be split and can be drilled normally before probing, then probed and classified as an ore or waste advance. Probe before setup is broken down in case more holes are needed. Generally, it is preferable to start probing one side as soon as the miner moves over to drill the other side of the face.
3. We will not try to split any ore less than 1.5' thick if solid and 2.5' thick if fractured. Take the complete round as low grade.
4. The undercut must be minimum 4.5' clearance - or the round cannot be split shot.
5. Always load top holes in split and back holes in full round as light as possible.
6. Grade control man is responsible to spread round wider or higher or lower based on probing in all rounds. If ore is continuous across face in stope development, (6x7 - 6x10) have miner drill one more row on both sides flared out as in diagram. If ore is narrowing in 6x10 don't shoot rib holes.



Drift and entry rounds go to designated width only, but must go up and down with ore as above.

7. Stope walls will be probed prior to slashing. All probe holes will be drilled at slash angle so they can be shot if they run. Keep stope retreat wall advancing equally when a waste pillar is encountered. Same grade control - split shooting procedures apply in stope as in advances.
8. If the miner chooses to use a "V" cut he can drill the full face regardless of size because it can still be split after the "V" is established.

9. All Rock bolt holes must be probed. If as much as 1 foot of high grade (+ 0.30) or 2 feet of medium grade (+0.15) is hanging on the back, it must be salvaged as clean as possible by blocking the rear (waste) portion of the holes.
10. The grade control engineers must witness the loading of All split shots or short rounds (taking a few feet of back from bolt holes) to be sure the miner is loading the round correctly.
11. Remember, the miner is paid extra for holes not blasted so don't be tempted to blast marginal holes that shouldn't be. However, the practical integrity of the round must be maintained, ie: it must pull so some holes that otherwise shouldn't be will occasionally have to be shot to pull the round. Experience and judgement are necessary in grade control and the miner knows which holes he must have to pull the round. Listen to him.
12. Overbreak is the worst enemy of grade control. Load burns heavy to make it pull but load perimeter holes as light as possible.

shot, 0.08% U₃O₈. Broken ore cutoff is 0.04% U₃O₈ for general mucking.

11.2 All ore mined is stockpiled separately in the following classifications:

- "0" Pile - 0.04% to 0.07% U₃O₈
- "1" Pile - 0.071% to 0.10% U₃O₈
- "2" Pile - 0.101% and Up

11.3 The "0" pile is primarily used for blending with the "1" and "2" piles and most blending is done on the property. This technique is used to produce the most economic grade for shipping, which currently is 0.13% to 0.14% U₃O₈ under existing mill contracts.

11.4 Todilto does not process ore but only sells the crude ore to the United Nuclear-Homestake Partnership Mill. The ore must go to this specific mill because it is the only hydroxide process mill in the Grants District. The limestone-host ore must go to a non-acid process mill. We actually sell to either United Nuclear or Homestake as separate companies, who then toll the ore through the Partnership Mill.

11.5 Disequilibrium of the Haystack ore is not a severe problem. However, the first 1,000 tons mill lot produced on the Vandever lease will be used to compare Todilto's probing results versus the mill assay.

12. HEALTH AND SAFETY MEASURES

12.1 Todilto will comply with all State and Federal mining regulations and laws.

12.2 Since no surface or ground water exists on the subject lease, monitoring programs will not be needed.

13. ABANDONMENT

13.1 Since the interim mining plans propose no shafts, declines, vents or other structures on the Vandever lease, the abandonment will be the sealing of the 1200 North haulageway at the boundary.

14. ANCILLARY INFORMATION

14.1 The proposed interim mining plan will not affect or change the power resource system, water requirements, personnel requirements, the social services or economics of the area, nor will it affect the people or the land use by the people.

14.2 The project will increase the income of Brown Vandever due to the royalties. His attitude is very positive towards the project. Additionally, per Clause 29 of the lease, the project will create some employment opportunities.

15. RECLAMATION

- 15.1 Since no land disturbance will be caused from the proposed interim mining plan, no reclamation plan is needed.

ADDENDUM 2 TO INTERIM MINING PLAN

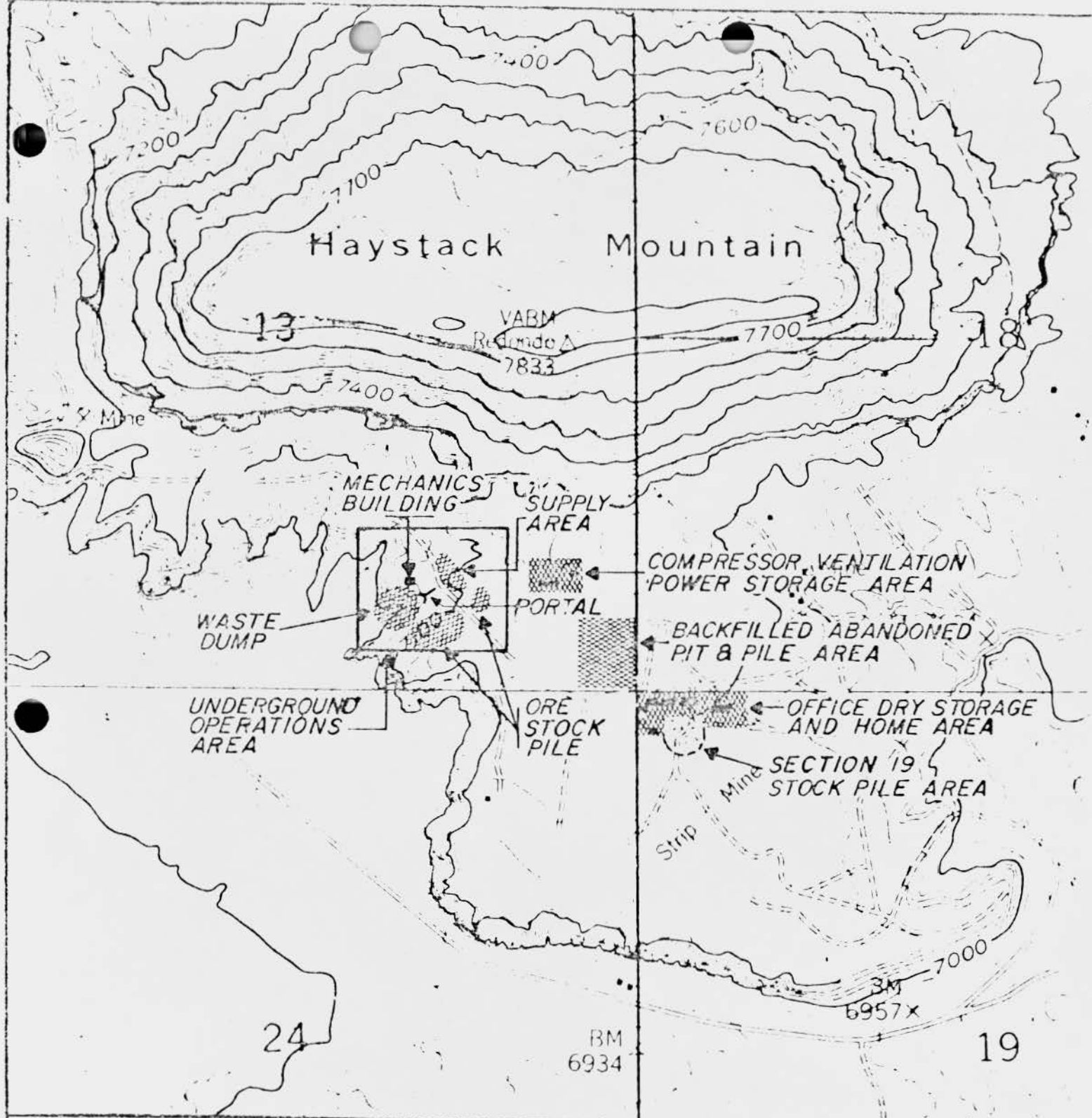
SW $\frac{1}{4}$, Section 18, T13N, R10W

1. HAYSTACK EMPLOYMENT

- 1.1 Todilto Exploration and Development Corporation maintains a total personnel of 17 people to operate its Haystack underground and intermittent surface mining operation.
- 1.2 The major breakdown of the Haystack personnel is as follows:
 - a) 3 staff; 1 supervisor and two production geologists
 - b) 12 miners and underground helpers
 - c) 1 surface helper
 - d) 1 full time mechanic

2. HAYSTACK SURFACE STRUCTURES

- 2.1 The Haystack underground operation (see map T-1) affects approximately 20 acres which includes a fixed mechanic's shed, storage area, movable powder and cap magazines, and fuel tanks. Out of the 20 acres, approximately 18 acres are devoted to waste and ore stock piles. Additionally, another 2 acres are used as a compressor, ventilation storage and power area. (See map T-1). The majority of the equipment is housed in a fixed shed.
- 2.2 Surface mining activity encompasses approximately 8.5 acres, in which 4.5 acres comprises Todilto's abandoned open pit operation and stock pile area. The additional 2 acres consists of ore stock pile areas for the intermittent surface mining of the N $\frac{1}{2}$ of the NW $\frac{1}{2}$, Section 19. Additionally, the area has several small movable storage sheds. (See map T-1).
- 2.3 The office, dry and housing area, covers approximately 6 acres. The area includes an office and dry trailer, two small fixed storage sheds, two mobile homes and an additional two trailer hook-ups which are used intermittently (see Map T-1).



EXPLANATION



AREAS OF INFLUENCE



BUILDINGS & TRAILERS



HAYSTACK PORTAL



TODILTO EXPLORATION &
DEVELOPMENT CORP.

ALBUQUERQUE

NEW MEXICO

HAYSTACK MINING OPERATION

AREAS OF INFLUENCE

T13N, R11W, SEC. 13 & 24

T13N, R10W, SEC. 18 & 19

SCALE: 1" = 1000'

DATE: 6/20/80

DRAFTED BY: R.T.

MAP T-1

APPENDIX J

PHOTOGRAPHS



Rotary Drilling Rig at Exploration Borehole
in Lease N00-C-14-20-8396; Waste Rock from
Abandoned Federal and Mesa No. 2 Mines
Visible in Foreground; Southeast End of
Haystack Mountain in Background.



AUG 80



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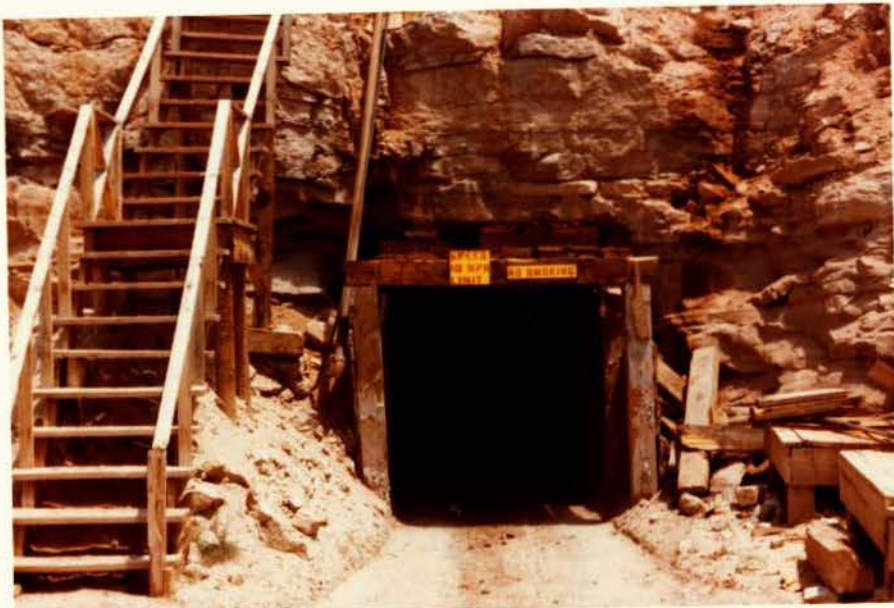
Recently Completed Exploration Boreholes
in Lease N00-C-14-20-8396



Office, Dry and Housing Facilities at Haystack Mine (Section 19, T. 13 N., R. 10 W.); Southwest End of Haystack Mountain in Background.



Underground Operations Area at Haystack Mine (Section 13, T. 13 N., R. 11 W.)



West Portal of Haystack Mine (Section 13,
T. 13 N., R. 11 W.).



Underground Operations Area at Haystack Mine;
Haystack Mountain in Background.



Compressor, Mine Ventilation, and Electrical
Sub-Station Facilities at Haystack Mine
(Section 13, T. 13 N., R. 11 W.).

Albuquerque District Mining Office
(Originating Office)

P. O. Box 69

(Address)

Albuquerque, New Mexico 87103

(City)

Identification No. A-81-09NEPA CATEGORICAL EXCLUSION REVIEWPROJECT IDENTIFICATION

Operator/Project Name Todilto Exploration and Development Corp., Haystack Mine Extension
 Project Type Underground Uranium Exploration/Mining
 Project Location Navajo Allotted Mining Lease NOO-C-14-20-8396
SW/4, Section 18, T. 13 N., R. 10 W., N.M.P.M.,
McKinley County, New Mexico
 Date Project Submitted January 7, 1981

FIELD INSPECTION

DATE _____

Field Inspection
Participants _____CATEGORICAL EXCLUSION REVIEW INFORMATION SOURCE

Criteria 516 DM 2.3.A	Federal/State Agency			Local and Private Corres- pondence (Date)	(*) Previous NEPA	(**) Other Studies and Reports	Staff Expertise	Onsite Inspection (Date)	Other
	Corres- pondence (Date)	Phone Check (Date)	Meeting (Date)						
1. Public health and safety.					X	X	X		
2. Unique charac- teristics					X	X	X		
3. Environmentally controversial					X	X	X		
4. Uncertain and unknown risks					X	X	X		
5. Establishes precedent					X	X	X		
6. Cumulatively significant					X	X	X		
7. National Register Historic Places	NPS 6-6-80				X	X			
8. Endangered/ threatened species	FWS 4-4-80				X	X			
9. Violate Federal, State, local, Tribal law					X	X			

(*) Over (**) Over

I have reviewed the proposal in accordance with the categorical exclusion review guidelines.
 This proposal would not involve any significant effects, and therefore, does not represent
 an exception to the categorical exclusions.

January 14, 1981

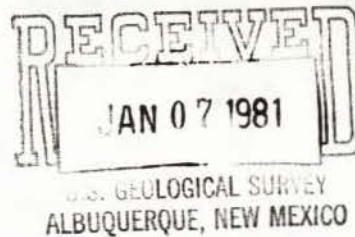
(Date Prepared)

David R. Setler
(Signature of Preparer)

I CONCUR:

January 15, 1981
(Date)DAVE G. Jones
(Supervisor)

- (*) Sitzler, David R., August 21, 1980, Environmental Assessment Proposed Interim Mining and Reclamation Plan for the Haystack Mine Extension, Todilto Exploration and Development Corp.
- (**) New Mexico Environmental Institute, March 1974, An Environmental Baseline Study of the Mount Taylor Project Area of New Mexico, Gulf Mineral Resources Company.

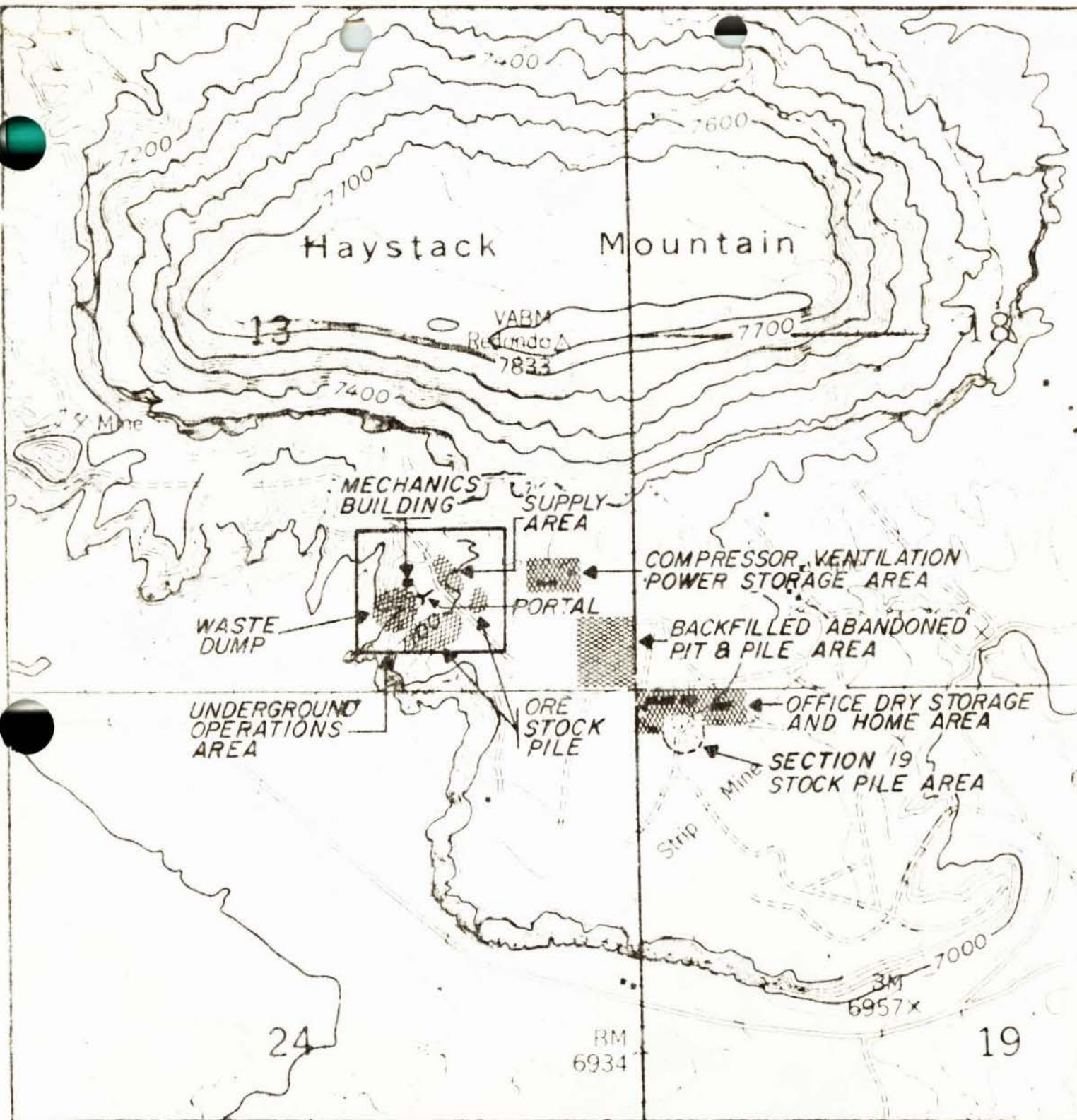


ADDENDUM 3 TO PROPOSED INTERIM MINING PLAN

Todilto Exploration and Development has now completed its initial drilling program of the SW $\frac{1}{4}$, Section 18, BIA Lease N00-C-14-20-8396. Based on the successful drilling results (see Engineering Data Sheet) of the East Zone and the development of extensive ore zones under Haystack on Section 13, Todilto requests approval of the following changes to its proposed interim mining plan (please refer to Map N00-C-14-20-8396-D-1):

1. The underground mining operations may proceed 800 feet south from the point of underground entry into the lease. This will ensure adequate development of the south portion of the East ore zone and permit us to examine the extent of old Federal workings in the area.
2. The underground mining operations may proceed north to the north boundary line from the point of entry into the lease, and to develop mine operations to the east boundary line from any point north of the 1400N. The above will permit adequate exploration of any ore extensions under Haystack, as done in your underground operations on Section 13.

These are the only requested changes from the Interim Mining Plan, and all other points, conditions and requirements will remain the same.



EXPLANATION



AREAS OF INFLUENCE



BUILDINGS & TRAILERS



HAYSTACK PORTAL



TODILTO EXPLORATION &
DEVELOPMENT CORP.

ALBUQUERQUE

NEW MEXICO

HAYSTACK MINING OPERATION

AREAS OF INFLUENCE

T13N, R11W, SEC. 13 & 24

T13N, R10W, SEC. 18 & 19

SCALE: 1" = 1000'

DATE: 6/20/80

DRAFTED BY: R.T.

MAP T-1

ADDENDUM 2 TO INTERIM MINING PLAN

SW $\frac{1}{4}$, Section 18, T13N, R10W

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- 2.3 The office, dry and housing area, covers approximately 6 acres. The area includes an office and dry trailer, two small fixed storage sheds, two mobile homes and an additional two trailer hook-ups which are used intermittently (see Map T-1).